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Editor
Thomas H. Sawyer, Ed.D.
NAS Fellow, AAHPERD Honor Fellow
Professor Emeritus, Kinesiology, Recreation, and Sport
Indiana State University
thomas.sawyer@live.com

Associate Editor
Tonya L. Sawyer, Ph.D.
Chair, Department of Business and Leadership
Assistant Professor of Sport Management
Saint Mary-of-the-Woods
tonya.sawyer@smwc.edu

Phi Epsilon Kappa

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Editorial Office

Thomas H. Sawyer, Ed.D., Editor
5840 S. Ernest Street
Terre Haute, IN 47802

Subscription Office

Sagamore-Venture LLC
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SPORT

What's in a Title?: NBA Chief Diversity Officers and A Call to Action

B. Nalani Butler, Anne DeMartini, and Daniel Kelly II

Abstract

This research study took an in-depth look at the role of Chief Diversity Officers (CDOs) within the National Basketball Association (NBA). This study investigated the expansion of CDOs in the NBA and analyzed the number of NBA franchises with a designated CDO. This study reviewed the titles, roles, and demographics of CDOs within the NBA. A case study methodology used a content analysis and semi-structured interview protocol and assisted in compiling and coding information about the role of the CDO within an NBA franchise (Merriam & Tisdell, 2015). In addition, two CDOs in the NBA were interviewed to understand how the 2020 Black Lives Matter demonstrations and the murder of George Floyd put a spotlight on how organizations addressed issues around diversity, equity, and inclusion (DEI). The study found that 16 NBA teams have a CDO role, and most were spearheaded by Black professionals. The titles and reporting structures of the roles varied greatly, as did the educational degrees held by employees in the positions. Findings indicate that organizations

B. Nalani Butler, Assistant Professor of Sport Management, Kennesaw State University; Anne DeMartini, Recreation Programming Kennesaw State University; and Daniel Kelly II, Academic Director of Graduate Programs, Preston Robert Tisch Institute for Global Sport, New York University;. Please send author correspondence to dgk2@nyu.edu

must provide the CDO with sufficient authority and support to ensure that employees in the role can accomplish the range of responsibilities required for transformative DEI work.

Introduction

The National Basketball Association (NBA) is the leading professional basketball league worldwide. Since the inception of the NBA in 1946, the organization has been a trailblazer in the promotion and marketing of basketball around the globe and has inspired many generations of individuals to pursue the sport of basketball (Garder & O'Brien, 2005). The NBA has established itself as a league that has paved the way for diversity, equity, and inclusion (DEI) due to the number of non-white and non-American players on NBA rosters (Gough, 2022). Over 70% of NBA players identify as Black, with 2.2% identifying as Latino, 0.4% as Asian, and 6.3% as Other (Lapchick, 2020). Based on The Institute for Diversity and Ethics in Sport (TIDES) standards, the NBA boasts diversity on the court, on the sideline, and in the front office. For over 10 years, the NBA has received an A+ or A rating for its inclusive hiring practices (Lapchick, 2020). The NBA has been consistent and intentional about having a diverse front office and players on the court. Compared to other professional sports leagues within the U.S., the NBA has been steady with its hiring practices and as an advocate for social justice within the league and beyond (Moran, 2020). The NBA has demonstrated this by supporting player demonstrations for social causes and creating positions within NBA team front offices related to DEI (NBA Diversity and Inclusion, 2022).

2020 marked a year of social and civil unrest as a direct response to the murder of George Floyd by law enforcement, which was recorded and went viral during a time when many worldwide were home quarantining during the COVID-19 pandemic (Onwuachi-Willig, 2021). The murder of George Floyd sparked a wave of demonstrations throughout the U.S. and globally. This great awakening of a new wave of a movement for racial equality brought individuals from all corners of the world to the streets to march and demonstrate for social justice in the name of Black Lives Matter (BLM) (Reny & Newman, 2021). What made the 2020 BLM demonstrations different from the social justice demonstrations of the 1960s was the di-

verse nature of the demonstrations and that generations of individuals marched together to stop racial injustices (Parker et al., 2020). This research study used a case study methodology, in which data collected included both a content analysis and interviews of two current Chief Diversity Officer (CDOs) in the NBA to learn more about their role as CDOs and the impact of the 2020 BLM protests on their position within their NBA organization. The results of this investigation can be used as a model for sports teams looking to implement DEI initiatives and create CDO positions.

What is the Role of a Chief Diversity and Inclusion Officer (CDO)?

Research shows that diverse organizations are higher performing and attract more qualified talent than those lacking in diversity. According to Hunt et al. (2015), "Companies in the top quartile for racial and ethnic diversity are 35% more likely to have financial returns above their respective national industry medians" p. 1. The Boston Consulting Group found that "companies with more diverse management teams have 19% higher revenues due to innovation" (Lorenzo et al., 2018). Companies that do not put the effort or support toward DEI issues can see a direct and negative impact on their bottom line. Diversity matters, yet some individuals are unwilling to get on board until they feel pressure to be more intentional about DEI within their organization. Even with research showing that a more diverse work group leads to a better and more successful work environment, some organizations are still not incentivized to support CDO positions fully.

Having a position dedicated to diversity and inclusion is nothing new. In fact, CDO roles are a part of many Fortune 500 companies, institutions of higher learning, and various federal agencies (Minor, 2021). Currently, professional sports leagues and teams around the globe are starting to implement or put more emphasis on the role of the CDO due to the 2020 BLM demonstrations around racial equality and inclusion (Moran, 2020). While CDO is an all-encompassing title for those in positions that work in the realm of DEI, the title can take on many different names, such as Chief Inclusion Officer, Diversity and Inclusion Director, Chief Equity Officer, or Social Responsibility Officer. For the sake of this article, we will use the

term CDO throughout the research paper to describe individuals who are in a leadership position within the DEI space.

According to Minor (2021), "The primary role of the Chief Diversity Officer (CDO) is to ensure the organization's cultural values. The CDO is tasked with being accountable for compliance, advocacy, and education of the company. He/She uses interpersonal skills to promote collaboration among multiple business units" (p. 1). In many cases, the CDO role entails managing DEI within the organization and recruiting individuals to be a part of the organization while also being immersed in community outreach efforts related to marginalized groups with whom the company is trying to build a relationship. The role of CDO does not entail performing one specific task in one department but being the leader of DEI initiatives for the organization. Based on research from Cooper and Gerlach (2019), out of 250 of the largest cities in the U.S., one out of four hired a CDO for the city, showing that the position is growing in number and importance within local government entities. Within higher education, the role of CDO has grown significantly in recent years, and the role has been initiated because of various crises on campus, such as racial tension, gender discrimination, or prejudice (Wilson, 2013).

According to McGirt (2019), 47% of companies on the Standard and Poor's (S&P) 500 index currently have a CDO or equivalent, and just two-thirds have been hired or promoted into those roles since 2016. One important concern for the CDO role is the intention and the support the role receives. While creating a role due to a crisis may be in good faith, some see it as an appeal for positive publicity or a symbolic gesture rather than an attempt at true transformative change within the organization. This is because the role is often created yet is not always well supported or funded, and many CDOs are tasked with unrealistic expectations (McGirt, 2019). Leon (2014) found that positional authority, support staff, funding, and reporting structure pave the way for a CDO to be successful. Positional authority, support staff, funding, and reporting structure are four pillars crucial in creating the foundation for the success of the CDO. Without these four pillars, the CDO does not have the financial support, resources, or power to influence the company's organizational structure and make transformative change, even though

they may be tasked with the responsibility. In addition, the CDO has a high turnover rate due to the lack of resources, unrealistic expectations, and absence of support from top-level executives (Shi et al., 2021). Many in the CDO role do not have the power to make a difference due to the odds being stacked against them, in the form of not having data to make a difference and not having the support of their colleagues, who are the ones that ultimately decide if they want to be a part of cultural shifts within the organization or not.

The NBA and Chief Diversity Officers (CDOs)

The NBA is an example of an organization that was a visible champion of social justice during the 2020 BLM demonstrations. The NBA started to embed the CDO role within various franchises years before 2020. 2020 propelled the NBA and various other sports organizations to emphasize the CDO role more and encourage more franchises to create a dedicated DEI position within their organization. In 2014, the Atlanta Hawks hired the first person in NBA history to oversee DEI within a team franchise. That person was Nzinga Shaw, and she was hired in 2014 as the Vice President of Chief Diversity and Inclusion Officer, eventually being promoted to a senior DEI role within the organization (Mullen, 2021).

Nzinga Shaw was hired as the Vice President Chief Diversity and Inclusion Officer for the Atlanta Hawks in 2014 as a direct response to the Bruce Levenson incident (Gill et al., 2017) when the former owner of the Atlanta Hawks created and sent a racially insensitive email to individuals within the Hawks organization in 2012. In the email, Levenson used inappropriate and offensive language in reference to Atlanta Hawks fans and stereotyped fans and their interests based on race and not market research (Schwartz, 2014). The Atlanta Hawks received backlash from this email, which went viral. It put a dim spotlight on the Hawks organization, representing the city of Atlanta, which is over 50% Black (Census, 2021). Atlanta is a city known worldwide for its civil rights leaders, such as Martin Luther King Jr., John Lewis, and Andrew Young, who are all trailblazers in social justice and racial equality. For that reason, the team owner's creation of an insensitive and racially charged email created backlash from Hawks fans, the city of Atlanta, and the NBA, and the response of the Hawks organization was swift and intentional.

By 2014, the Hawks hired Nzinga Shaw, who focused on diversity, inclusion, and community-building initiatives in the greater Atlanta area (Mullen, 2021). While Shaw was brought on as a direct response to racist tension within the organization due to the Levenson email, she set her sights on being inclusive in all aspects of DEI, with outreach to the LGBTQ+ community, people with physical and intellectual disabilities, and various minority groups within the Atlanta area and beyond. According to an interview with Shaw, she stated that Internal Human Resources (HR) issues accounted for 30% of what she did. However, most of her job entailed working with fan experience and community engagement (Earth Equity Advisors, 2016).

The Atlanta Hawks are an example of how one NBA franchise reacted to issues around racial tension and their basketball organization. The Hawks addressed the social issue and created a position within the organization to respond to the backlash. The Hawks organization was proactive with equity, inclusion, and community outreach initiatives. While the Atlanta Hawks are just one example, the NBA, as an entire league, addressed issues of race and equity directly (Medina, 2020). 2020 showcased how the NBA dealt with issues related to racial inequality worldwide. The tragic police-related shooting of George Floyd created a direct response from the NBA in relation to social justice, and the league made very clear its stance regarding racial equality through its support of BLM and players who wanted to protest (Butler & DeMartini, 2022).

Methodology

A case study methodology was employed for this research study (Yin, 2018). Within the case study methodology, a content analysis and a semi-structured interview protocol were used to collect information on Chief Diversity Officers for NBA teams. The study also had a small sample of interview participants. Therefore, we cannot generalize in a propositional sense customary in positivist research (Simons, 2009). However, "in many contexts where we conduct case study research, we have an obligation not necessarily to generalize but to demonstrate how and in what ways our findings may be transferable to other contexts or used by others" (Simons, 2009, p. 164). Our findings and implications create knowledge through naturalistic generalizations (Stake, 2008). They derive from the tacit understand-

ing of how things are and how they will likely be later or in other places with which this person is familiar and guides action (Stake, 2008). Therefore, while this information may not be generalizable to an entire population, information about the titles, responsibilities, and experiences of NBA CDOs can be useful to other sports scholars, sports managers, and those interested in DEI in the workplace. The following sections will outline how the methodologies were utilized for data collection and analysis.

This research study gathered and analyzed publicly available data on the individuals hired to be CDOs in the NBA. Content analysis is defined as the summarization and reporting of written data (Cohen, 2018). Content analysis analyzes linguistic or visual content (Van Leeuwen & Jewitt, 2001; White & Marsh, 2006). Using the content analysis methodology assisted in seeing patterns and trends when discussing the role of the CDO. The review of pictures, texts, and position descriptions helped understand a CDO's role in the NBA.

The methodology included each principal investigator data mining NBA official websites and searching for official NBA league and team announcements in the media using keywords such as NBA and Diversity and Inclusion Officer, a specific team franchise name, and the term Chief Diversity Officer (CDO). In addition, LinkedIn was used as a secondary source to confirm the name, position, background, and image of each NBA CDO.

The investigators then coded data for position (job title within the NBA organization), education level, race, and gender. The investigators used the same methodology employed by the TIDES Race and Gender report card to code data on the race and gender of NBA CDOs (Lapchick, 2020). While the race and gender of all individual CDOs were not based on personal identification, the investigators coded images for demographic characteristics based on perception since personal information on race and gender was not self-reported (DeMartini & Butler, 2022). In some instances, the race and gender of the individual were self-reported through the interview process or on the CDO's personal LinkedIn profile page. Visual images were analyzed just as texts were analyzed by reading the meaning behind the words (Cohen et al., 2018).

In addition to a content analysis within the case study methodology, a semi-structured interview protocol was used as a guideline to

interview two current NBA CDOs (Merriam & Grenier, 2019). The case study interviews were conducted via video chat and consisted of a semi-structured interview protocol. This was a typical case study (Yin, 2018). The objective was to obtain and understand the role, responsibilities, and impact of the 2020 BLM demonstration on the role of NBA CDOs and the CDOs' perspective on how their organization viewed DEI.

Study participants were selected because they held a current role as a CDO for an NBA team. All participants agreed to participate in this study and had the choice to opt out of answering questions they did not feel comfortable answering. In addition, all participants in this study will remain anonymous. This is because of their high-profile job responsibilities, and as one CDO put it, "We are in the court of public opinion, not law." Having anonymity in this study allowed participants to speak freely about their experiences without the fear of retribution from their employer or being targeted for their position on societal issues.

Interviews lasted for precisely 30 minutes each. There was a timer on the virtual call, and the participants were busy with back-to-back meetings. Therefore, additional inquiries and follow-up questions could only be answered via email after the interview. Semi-structured interview questions entailed learning about the skillsets and background to go into the CDO field, various DEI initiatives that the CDO implemented within their organization, the positionality of the CDO role within the organizational structure of their team, as well as the impact of the 2020 BLM demonstrations on the CDO position.

NBA CDOs in this study were contacted via LinkedIn, and two CDOs from the 16 teams (12.5%) responded to be a part of this study and to be interviewed about their roles. While we were hoping to have more participation, it was challenging to gain access to this population due to their high-profile title and the fact that there were only 16 CDOs in the NBA during the time the study was conducted. The principal investigators gained access to these high-profile individuals through their connections with the sports industry from working in professional sports. Two Black males were interviewed for this study, and participants were labeled Participant #1 and Participant #2 for confidentiality purposes. Participants #1

and #2 provided opportunities to connect with other NBA CDOs in their network; however, no additional CDOs followed through with confirming a date or time to have a virtual interview. Based on conversations with Participants #1 and #2, the authors transcribed, coded, and triangulated data to compile results.

Findings

Table 1 outlines the NBA teams with CDOs along with the title of the CDO. Based on the findings, there were a total of 16 NBA teams that had a CDO, three NBA teams that were in the process of hiring a CDO, and 11 teams that did not have a designated CDO role. The 11 teams that did not have a CDO or were not in the process of hiring a CDO were not included in Table 1. In total, 16 teams in the NBA had a dedicated CDO role, three teams were hiring a CDO, and 11 did not have a CDO as of March 2022. Please note that the person in CDO with the highest leadership position was the only one included in Table 1. The rationale is that we wanted to illustrate the NBA teams with a CDO in place, not necessarily an entire staff dedicated to DEI. [Based on the analysis, the majority of CDOs in the NBA were people of color, specifically Black people, with 12 being identified as Black, four as white, and then one without a picture (please note that we only focused on the person in the position who had the highest leadership position). As far as gender, there was a nearly even split with nine women and seven men. Based on collected data, the role of CDO seems like a role that has created an opportunity for more people of color to be brought into the world of professional sports and to hold a leadership position.

Interviews created an opportunity for more inquiry into the role of an NBA CDO. The reoccurring themes that came up throughout the interviews with the two NBA CDOs included:

- Organizational support;
- Positional authority;
- Impact of 2020 Black Lives Matter (BLM) demonstrations; and
- Background and skillset.

In the following sections, we discuss organizational support, positional authority, the impact of 2020 BLM 2020 demonstrations, and the background and skillset of a CDO in the NBA.

Table 1
Diversity and Inclusion Officers in the NBA

Atlanta Hawks	Executive VP and Chief People, Diversity, and Inclusion Officer
Brooklyn Nets	Executive Director of Diversity and Inclusion
Cleveland Cavaliers	VP of Diversity, Inclusion and Community Engagement
Dallas Mavericks	VP Diversity, Equity and Inclusion
Detroit Pistons	Director of Diversity, Equity, & Inclusion
Golden State Warriors*	
Indiana Pacers*	
Los Angeles Clippers	Chief Diversity and Inclusion Officer & VP, Community Relations and Player Programs
Los Angeles Lakers	Director of Racial Equity & Action
Milwaukee Bucks	Diversity, Equity, and Inclusion Outreach Manager
Minnesota Timberwolves	VP Player Programs, Diversity and Inclusion Manager
Orlando Magic	Chief Diversity, Equity & Inclusion Officer
Philadelphia 76er's	Chief Diversity and Impact Officer
Phoenix Suns	Senior VP of People and Culture
Portland Trailblazers	Senior Vice President of People and Culture
San Antonio Spurs	Sr. Manager Diversity, Equity, Inclusion & Belonging Strategy
Toronto Raptors	Vice-President, Organizational Culture and Inclusion
Utah Jazz	Senior Vice President, People & Culture
Washington Wizards*	

Note. * Team who are in the process of hiring a CDO

Organizational Support

Organizational support is when employees of a company perceive their contributions as valued and that the company cares about their well-being (Kurtessis et al., 2017). According to Organizational Support Theory (OST), the employee and employer relationship sets the tone for the employee's commitment, job satisfaction, goals, and outcomes (Eisenberger & Stinglhamber, 2011). Therefore, the perception of the organization's support is important in motivational factors that contribute to the employee's success, commitment to the organizational goals, and mission of their workplace responsibilities.

In this case study, organizational support emerged quite a bit throughout the interviews. In both interviews, the participants discussed organizational support from the league and team levels. They listed various initiatives the league and team were doing to promote DEI. As Participant #1 put it, "I think they [the organization] are completely on board [with DEI] and the reason I say that is because there is a structured budget line for me, and I have the autonomy to do some innovative work. What I've been proud of, is how I've

been able to integrate with the city." Participant #1 perceived having a budget line dedicated to the position and autonomy as being supported in his role.

In addition, Participant #2 had similar sentiments about the support of the organization he was employed with. Participant #2 felt that his positionality in his role and being able to report directly to the CEO and have DEI in its separate department allowed the initiatives he spearheaded to have a direct impact on the culture of the organization, the engagement with the community, and the bottom line as far as economic opportunity for the organization to increase revenue and sales in niche diverse markets. Participant #2 stated, "I have a great opportunity to have a seat at every table in our organization." Participant #2 referred to his role in marketing, HR, community relations, and various other departments throughout the NBA franchise he works for. He also had a team of four individuals who worked directly under him to help with DEI initiatives. In contrast, Participant #1 did not have a team and was the sole DEI person within the HR department for his respective team.

Participants #1 and #2 felt supported in their roles, with Participant #1 feeling support because of a dedicated budget line and autonomy and Participant #2 feeling support because of his positionality and autonomy in the organization. Participant #1 was the first person on his team to have the CDO role, and he started employment at his franchise during the 2020 BLM demonstrations. Participant #2 was brought on in 2019 (before the BLM demonstrations). Neither participant had a prescriptive set of duties and responsibilities that they had to follow, but rather, they had to be innovative in creating DEI initiatives to help with hiring practices, organizational culture, and outreach to the community. This sense of autonomy and having a budget line or a senior position within the organization created the perception of organizational support for both participants in the study. While both participants felt supported, they also had many responsibilities since the onus was on the CDO to perform the position's duties, with very minimal examples to refer to, because of the nuance of their position on their team and within the NBA. While autonomy provided a sense of support and ability for innovation, they were both still responsible for various duties that spanned over many departments.

While the mission of what they were doing in their role was supported, the organizational structure, number of responsibilities, and position of authority that they had came into question throughout both interviews. Participant #2 clarified that putting an instrument in place to measure the metrics of the role was crucial in gaining support from others in the franchise. Participant #2 made sure to have the ability to show measurable outcomes on the impact of DEI so that there was a way to measure success in the position. This measurement helped Participant #2 justify having additional team members and direct access to the organization's president. Participant #2 implemented a way to get the buy-in from his colleagues through metrics and communication; Participant #2 stated, "The language of DEI needs to be the same language of marketing, the language of engineering, operations… whatever that language is. There also needs to be a measurable outcome."

Research shows that many CDOs struggle with the definition of their role and the buy-in from other colleagues about its importance (Leon, 2014). This is based on language and the lack of measurable outcomes. Participant #2 championed this through his ability to connect with everyone based on a shared language within the organizational culture of the NBA franchise he worked with.

Within the NBA league, Adam Silver has consistently been at the forefront of advocacy for social justice and supporting players in their protests for racial equality (Conway, 2020). Adam Silver helped to set the social justice tone with the NBA, but each NBA franchise can decide how they want to incorporate DEI into the infrastructure of their respective team. While it is a top-down initiative coming from the league commissioner, the CDO position is not always fully supported at the team level because of a perceived lack of importance or the lack of resources allocated to the CDO role. This may be because the position is somewhat new to professional sports, and it is still being tailored to have a strong foundation for those that follow the path to be a CDO for a sports team.

Positional Authority

Positional authority is a situation in which the individual makes or is responsible for evaluating an individual, group, or situation (Law Insider, 2020). Positional authority enables the CDO to accomplish tasks and to make sure tasks are carried out through oversight and

the ability to add value within the organization. CDOs who lack positional authority have leadership challenges presented to them and often have difficulty making an impact in the organization because of bureaucratic barriers by not having their position fully supported (Bergmann, 1999). Positional authority breeds an inherent trust that the position is important; therefore, positional authority is essential for a CDO's success.

The two individuals interviewed for this study discussed their roles and how they were structured within their specific NBA franchise. As Participant #2 put it, "All CDO roles are not created equal. I have been in different places, and I held this position, and the responsibilities were all very different." Participant #1 was the sole DEI person in his organization and worked directly with HR. Participant #1 stated, "70% of my job is internal training I would say anything that relates to implicit bias, unconscious bias. I just try to provide a platform to educate our coaches, players, staff, anybody under our umbrella." While Participant #2 had a department that he oversaw, Participant #1 was under the HR umbrella and did not have a team. Even with 70% of Participant #1's responsibilities being in HR, he also worked with community relations, creating outreach initiatives, and worked with the marketing department on outreach around belonging and engaging marginalized populations in the city. Participant #1 came from being a CDO in a Division I athletic department and felt that his jump to the NBA was astronomical regarding supported resources and the fast-paced environment. According to Participant #1, "This is light years different in terms of resources and impact and support… where I was doing that for three years at [university] with $0 in the bank."

When Participant #2 was hired, he was able to position himself to report directly to the president of the organization. Participant #2 stated, "It [the CDO role] absolutely has to report to the CEO or president of the organization. Needs to be a separate structure…. if it's not structured that way then it becomes a part of the organization that's looked upon as an expense and not an asset. It becomes secondary to the organization." Participant #2 said that he would not accept a position as CDO unless it was a C-Suite position with its own department and if it reported to the head of the organization. In his interview, he discussed how the downfall of CDOs in organizations

stemmed from the positional authority of the role and the department in which the role was housed. In Participant #2's opinion, the position should never be housed under HR or Community Relations because that is when it would become a secondary role. Participant #2 felt that DEI should be a stand-alone department that could have a hand in every department at the organization. In Participant #2's opinion, DEI had to be embedded throughout the entire organization and not sit at the bottom of a department but stand on its own. Participant #2 was in a C-Suite position, so he could speak about his lived experiences and the positionality of his CDO role. Participant #2 was able to have an impact on the organization from HR to marketing, arena management, sales, etc. He was able to have the power to make DEI a priority and not a side item within the organization.

Positional authority had a direct correlation with how someone can do their job, the level of support they received, and the retention of a CDO. In this study, Participant #1 left the role as CDO less than two years into being in the CDO role. In contrast, Participant #2 started the position in 2019 and was consulting with other teams on how he implemented specific DEI strategies. Positional authority is crucial to having sustainability in the DEI space and supporting the CDO and its efforts. If the CDO is not valued and does not have a direct line to the president of the organization, then they may not be viewed as an important member in the organization, or as Participant #2 liked to call the employees within the organization he worked for, his "teammates."

Impact of BLM 2020 Demonstrations

The 2020 BLM demonstrations created a call to action for individuals and organizations around the globe to take a stand for racial equality. The NBA as a league employs many minority candidates, and about 74% of NBA players are Black (Lapchick, 2020). The murder of George Floyd had a direct impact on NBA players, and many started to mobilize and called on the NBA as a league to support their social justice efforts (Pina, 2022). This was very evident with the mobilization of Black voters to NBA arenas during the 2020 presidential election (Garcia-Hodges, 2020), the images of BLM on NBA courts in Orlando during NBA bubble play, and through the NBA creating and giving more support to DEI as a whole with the creation of more CDO roles (Andrews & Spears, 2020). When asked

about the BLM demonstrations and the impact on the CDO role, Participant #1 stated:

> I came in in the heat of it [BLM demonstrations]. George Floyd… everything we saw… I think it changed the whole scope of where we are today. I think it really allowed me to see our posture in a very unique way. We as an entire organization allowed our players to express themselves and our community to express frustration… and the action steps we were taking. That was part of me being here, because you needed someone doing this role full-time because you can't have one foot in and out… you had to go all in and I'm thankful that we did.

Participant #1 was brought on as a direct call to action because of the murder of George Floyd. At that moment, the franchise he worked for decided they needed a full-time person to be in the DEI space. Participant #2 felt the same way about the BLM demonstrations, stating:

> 2020 significantly impacted the value of my role. It wasn't just because I have the title, but it gave me the flexibility and it gave me the demands of being able to demonstrate how this role [role of CDO] is important. In the case of that time with everything that was going on from George Floyd to others that were killed and the whole social and racial uprising… I became a go-to person in the organization and that wasn't necessarily the case before. People started to understand my role but now I had a chance to demonstrate what a role like this actually does. So, the rise to see CDO's being very popular… a lot of that was just lip service and a lot of it was them saying "we just got to go get one," without really knowing what to do with a chief diversity officer.

Participant #2 was already in the CDO position as of 2019, yet 2020 brought a new lens and sense of urgency to the position. Then, his organization started to be more receptive and show gratitude and appreciation towards the CDO role.

Both participants felt the impact of BLM on their current positions. The 2020 demonstrations spotlighted their positions, and more

people within their organization and beyond started to respect and understand them because of the social climate that BLM brought about.

Background and Skillset for the CDO position

The NBA CDOs in that role all held different degrees (please refer to Table 2). Within this study, it was important to understand the background and skillset needed to be in a DEI position. Table 2 refers to the type of degrees that NBA CDOs held. Based on Table 2, the background of the CDO was diverse, with some having bachelor's degrees, master's, and law degrees. In addition, we asked the participants in this study to elaborate on how background and skillset play a role for an NBA CDO.

Table 2
Degrees of NBA CDOs

Name of Degree
Master of Business Administration (MBA)
Organizational Management/Leadership
Public Policy
Law
Marketing
Business Administration/Management
Management
Psychology
Sports Management
Finance
Human Resources
Education Policy
Accounting

According to the two participants that were interviewed, one must be multifaceted to be a CDO. Participant #1 stated:

> You have to be a very strategic thinker, intuitive, visionary as well… because that's the next challenge. Diversity equity and inclusion is the thing right now and you have to make it sustainable. You really have to have those analytical skills as well as written and oral communication skills because anything you can say to can be used not in the court of law

> but in the court of public opinion, based on what people see so you have to be very nimble and everything that you do.

Participant #2 had the same sentiment. Participant #2 had a background in marketing and sales and felt that to have a good grasp of the position, it would take a people management background and the ability to align a business approach in addition to working with people from diverse backgrounds. He felt that having a general business background would be helpful, stating:

> This work is about impacting the organization's bottom line, or mission… whatever it might be so a business background would be helpful, some sort of psychology background would be helpful or something that talks about groups her understanding groupthink or how people think or would have you how people think.

In Participant #2's estimation, business and psychology were two pillars that helped with the position and to be successful. Please keep in mind that Participant #2 had more years of experience in this position and oversaw an entire department, whereas Participant #1 had just started the role as a call to action because of the BLM protests and was under the HR umbrella. Based on the degrees held by the CDOs, all came from a different background (see Table 2), and no distinguishable degree propelled these individuals to be CDOs.

Implications and Discussion

Organizations must decide how they want to move forward with DEI in the workplace and whether to check a box or embed it in their culture. 2020 brought the conversation about DEI to the forefront through the 2020 BLM demonstrations. Due to this, many organizations have been tasked with how they want to address racial equality and social justice and to what extent they support the BLM movement. The role of CDO is a delicate one, and without financial and institutional support, those in the role are not able to have the power to succeed and, therefore, are set up for failure (Cutter & Weber, 2022). Based on interviews and research, it is a matter of funding, resources, and support from the top down that leads to transformative change when it comes to DEI within an organization.

In a DEI panel with Oris Stuart, the Chief People and Inclusion Officer for the NBA, Stuart stated, "There are those that are seeing the light… then those that are feeling the heat with the movement for social justice and equality" (National Sports Forum Summit, 2021). The NBA has continuously strived to create and sustain diversity within the organization. The NBA has been a leading example in professional sports through the NBA's support of social justice initiatives, specifically during the 2020 BLM demonstrations. The NBA answered a call to action and is a proactive league with issues revolving around DEI. Notably, the placement of CDOs on teams within NBA organizations has created a dedicated space to address issues such as racial discrimination, gender equality, and social justice.

Based on this current research study, organizational support, positional authority, impact of 2020 Black Lives Matter (BLM) demonstrations, and background and skillset should be considered when looking at the roles and responsibilities of CDOs in the sports industry and beyond. The support a CDO receives from an organization allows them to have the autonomy and the funding to execute tasks and initiatives (DeMartini & Butler, 2022). The positional authority increases the likelihood that a fundamental change may be made because the position was placed at a level of importance with a direct line to the president or CEO of the organization. Lastly, the background and skillset reveal the person's profile in a CDO position.

Based on research, minority applicants are securing positions as CDOs within sports organizations, government agencies, institutions of higher learning, and for-profit businesses. This is not surprising, seeing as organizations may want to put someone in the role who can identify as a minority and can speak from a lived and experienced narrative of feeling marginalized. It is important to note that with people of color being called upon to take this role, organizations must make sure that the structure is in place to be supportive so that they are not set up for failure. The high turnover rate and the lack of support must be seen as a call to action (Cutter & Weber, 2020). The role cannot be merely a figurehead position but a position funded and supported so that the person in the role can succeed. Regardless, if the person in the role is a minority, the position will fail and will not be sustainable unless there is clear support from various stakeholders within the company. One of the individuals

who was a part of this study transitioned from the role of CDO and could not connect us to additional contacts within the NBA due to his lack of access at the time and his abruptness in leaving the position. This was interesting because the role of CDO has a high turnover rate (Buttner & Lowe, 2017), and the person we talked to had been in the position for just over a year before leaving. This person was Participant #1, who did not have any staff support for the role he was in and lacked a direct line to the organization's president, yet was tasked with many responsibilities outside of the purview of HR, which was the department he was in.

With the CDO position being a delicate role with a high turnover rate, sports organizations must ask themselves how CDOs can be placed in a position to be successful. Funding, resources, and power dynamics within the organization all influence how supported a CDO may be within their company. Suppose organizational support, positional authority, impact of 2020 Black Lives Matter (BLM) demonstrations, and background and skillset are not considered and elevated to a place where transformative change can be made. In that case, organizations will see turnover and a lackluster approach to dealing with issues around DEI, which are issues that affect everyone in society, not just a small segment of the population.

In addition, not one team had the same title for their CDO. Within the 16 NBA teams, 11 incorporated the term diversity, 12 used the term inclusion, and those that did not use the term diversity and/or inclusion focused on people, culture, and/or racial equity. All the NBA CDO roles included more than one title. All the titles held a minimum of two responsibilities, while the maximum was four responsibilities (Diversity, Equity, Inclusion & Belonging Strategy). In total, at least 10 of 16 NBA CDOs had at least three titles. Future research should investigate how a position's title aligns with that position's roles and responsibilities and if more titles equate to more responsibilities in different roles. In addition, future research should focus on other sports entities to see how the position of CDO may be similar or different to the NBA. While autonomy and flexibility are necessary for the role, sometimes having too many responsibilities within a title can overly burden the person because of the number of duties they are expected to perform. When looking at the front office of an NBA team, most roles have one title that oversees one depart-

ment or specific task. Yet, the CDO role always has an "and" attached to the role and is not singular, usually a role that is diversity and inclusion, not just diversity. While diversity and inclusion go hand in hand, a person in this role needs support. One person tasked with two titles needs to be compensated for their two roles, in addition to having supportive resources to reinforce those two roles since that is part of their title and, most likely, their responsibilities.

Limitations

A limitation of this study is that the investigator's perceptions of race and gender may not match a person's self-identified race (Roth, 2016) or gender. Characteristics of the observer influence how they perceive another individual's race (Feliciano, 2016). This study also relied on publicly available information, which may have omitted some personnel data from NBA teams. In addition, a larger sample size of our population would have provided a more in-depth understanding of the various experiences of CDOs within the NBA (Charter, 1999).

Conclusion

CDOs are people in dedicated roles who focus on DEI of all populations based on race, gender, ethnicity, nationality, ability, sexuality, and religion, to name a few (Arnold & Kowalski-Braun, 2012). The creation of the majority of the CDO NBA roles was a direct response to the social justice demonstrations that happened in 2020 after the murder of George Floyd. Many NBA franchises responded by restructuring their team offices to include a role dedicated to DEI.

The NBA has been very vocal about supporting social justice initiatives, where other organizations may not be. Therefore, the position of CDO and how it is valued and positioned differs among leagues worldwide. In addition, more quantitative data on the experiences, motivations, and background of CDOs would be helpful regarding how this role can be supported so that the person in the role can thrive in their position. While we were able to interview two NBA CDOs, more data on sports CDOs, in general, will help in understanding how teams implement a call to social justice and work with issues related to DEI.

Oris Stuart was named the NBA's Chief People and Inclusion Officer in 2021. According to Stuart, "the murder of George Floyd

triggered a deep and passionate response across the league and has guaranteed a continued commitment to fighting for social justice" (Sky Sports, 2021). This trigger created many initiatives, such as the NBA Social Justice Task Force, which put forward the question of meaningful contribution in the space of DEI and how the NBA can be a game changer in the movement for racial equality and various DEI issues in general. One of the meaningful contributions that was made was the creation of CDOs on NBA teams throughout the league, in addition to the responses of the NBA during the 2020 BLM protests.

The NBA reacted to the murders of George Floyd by demonstrating their support of the BLM movement in addition to funding opportunities within the Black community and creating more accessible ways for people to vote and have their voices heard. These were all reactions; however, the NBA created more sustainable ways to be proactive with DEI efforts by hiring CDOs. We have learned that not only do pandemics stop sports, but so do racial injustices. Now, organizations and companies are taking notice and starting to put the building blocks in place to take action, with the NBA being an example for those looking to create meaningful change with the CDO role. However, one must remember that in order for a CDO to be successful, they must be fully supported by their organization by having the funding, autonomy, and access to the president or CEO of the organization.

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PHYSICAL ACTIVITY AND SPORT

Resilience in Youth With Type 1 Diabetes During COVID-19: A Qualitative Investigation

Rowan Williams, Eddie Hill, and Justin Haegele

Abstract

During the onset of the COVID-19 pandemic, access to youth programming for youth with type 1 diabetes was disrupted, preventing access to opportunities to build meaningful relationships and important skills related to diabetes management. Using a qualitative descriptive methodological approach to study design and analysis, semi-structured interviews were conducted with three youths aged 10-13. Interview prompts based on Wolin and Wolin's (1993) conceptualization of resilience were asked to youth about their everyday experiences, including illness management, protective and risk factors, and resilience characteristics (insight, independence, relationships, initiative, creativity, humor, and morality). Findings suggest that although access to supports, opportunities, programs, and services designed with the specific needs of youth with T1D diminished with the onset of COVID-19, protective factors present within their immediate environments were perceived as helpful to their overall well-being. Protective factors included existing relationships supported through digital communication and parents,

Rowan Williams, Scholar Recruitment and Engagement Coordinator, McNair Scholars Program, Old Dominion University; Eddie Hill, Associate Professor, Outdoor and Community Recreation Education, Weber State University; and Justin Haegele, Professor, Director for the Center of Movement, Health, and Disability, Old Dominion University. Please send author correspondence to edwardhill@weber.edu

and other adult family members present within the household as compensatory adult support.

Introduction

Relationships drive connectedness within supports, opportunities, programs, and services (SOPS), such as camps, acting as both a process and product of youth's experience. However, an estimated 6.7 million youth were unable to access many SOPS during the summer of 2020, which has largely been attributed to the SARS-CoV-2 pandemic (Browne & Wycoff, 2021; Gillig, 2022). On March 11, 2020, the World Health Organization declared the spread of the SARS-CoV-2 virus as a pandemic, prompting schools to transition to distance learning (Gillig, 2022). The shift to virtual instruction prompted by the pandemic reduced or removed access to support, including peer and adult interaction outside of their immediate households, as well as specialized camps and other programming modes to support individual accommodations due to chronic illnesses such as diabetes.

With a steady increase in diabetes diagnoses since the initial onset of the pandemic (Unsworth et al., 2020), understanding lifestyle changes and disease management is an important factor in preventing future complications. As of 2020, it has been reported that the prevalence and occurrence of type 1 diabetes (T1D) is increasing globally, with every 15 per 100,000 people being diagnosed with the chronic illness and 9.5% prevalence, respectively (Mobasseri et al., 2020). Although the development and successful administration of insulin as a viable treatment for type 1 diabetics occurred over 100 years ago, access to insulin is still inaccessible for those who need it (Colagiuri & Wilson, 2020). Factors including cost, manufacturing, and administration of the drug serve as global barriers to access insulin, which may increase as a response to the increase in disease prevalence (Colagiuri & Wilson, 2020; Mobasseri et al., 2020).

Additionally, health factors associated with complications with diabetes include "vision loss, renal failure, and cardiovascular disease… [and] elevated levels of depression and anxiety" (Sallay et al., 2021, p. 1). For youth living with T1D, additional stressors associated with their development and transition into wider society may pose additional sources of psychosocial stressors that require

special consideration in diabetes management (Liesch & Elertson, 2020). Key aspects of diabetes management include lifestyle changes and diabetes education, such as including nutrition and physical activity as routine parts of their everyday life alongside their established relationships with endocrinologists and diabetes educators. Programming designed explicitly with youth living with T1D in mind often applies an interdisciplinary approach to address the medical, psychosocial, and developmental needs of this specific population, including education and support related to the chronic condition (Boman et al., 2017; Hill et al., 2019; Weissberg-Benchell & Rychlik et al., 2017; Weigensberg, et al., 2018).

Kaye-Kauderer and colleagues (2021) discuss resilience as a preventive and promotional mechanism essential to human development. As a marker of skills and coping mechanisms required to thrive, resilience can be described as "the ability to bounce back from adversity, serious threat or trauma" (Kaye-Kauderer et al., 2021, p. 166). As the world shares in exploring creative means of managing stressors related to the COVID-19 pandemic, experiencing hardships is an inevitable part of life. Therefore, understanding individual response to objective calamity may help better support youth's desire to thrive.

Resilience in the context of positive youth development can be understood as a dynamic characteristic impacted by biological, ecological, contextual risk, and protective factors present in a young person's life (Kaye-Kauderer et al., 2021). Risk factors such as alienation, high levels of stress, and addiction can lead to negative or undesirable and unhealthy behaviors (Huston et al., 2016). To mitigate risk present in youths' lives, engaging in goal setting and maintaining positive relationships can serve as protective interventions that counteract present risk (Fraser et al., 1999). Practitioners and scholars working with youth have focused significant attention on the concept of resilience, shifting their focus on young people's adaptability in the face of adversity and providing SOPS to promote resilience (Allen et al., 2021; Ettekal & Agans, 2020; Witt, 2018).

Our study focuses on Wolin and Wolin's (1993) articulation of seven traits associated with being a resilient individual, which include *insight*, *independence*, *relationships*, *initiative*, *creativity*, *humor*, and *morality*. Insight is an individual's ability to make appropriate

adjustments to their behavior based on their ability to perceive situations and actions of others within nonverbal and verbal communication. Independence refers to the capacity to make sound decisions based on one's wants and needs as opposed to external influences. Relationships include the maintenance of connection with peers, family members, and significant adults in one's life. Maintenance of relationships included the establishment and retention of healthy relationships and the identification of codependent behavior. Proactiveness is a defining characteristic of initiative, being the desire to improve one's selves and the environment around them with the tools they possess. Creativity and humor both prioritize the ability to find joy in one's life despite circumstances. While creativity entails the ability to generate alternatives and options in life to address risk factors, humor highlights the ability to identify new perspectives within their current circumstance. Morality is the theoretical proximity between an individual's immediate decision-making process and one's moral convictions. This specific construct has been modified in other studies emulating Wollin and Wollin's (1993) conceptualization of resilience to better align with youth-centric outcomes (see *values orientation* in Hill et al., 2007). Individuals who possess higher values orientation tend to make appropriate decisions and possess the courage required to stand by their decisions.

Research supports the idea that resilience and individual perceptions of protective and risk factors present within their everyday lives can impact the self-regulation of youth living with T1D (Thomas, 2004), including the development and practice of important health-related behaviors (Hillard et al., 2017; Hill et al., 2018; Huston et al., 2016). However, little attention has been given to the social and individual processes that youth engage with daily. Therefore, the present study sought to address the following question: how do youth with type 1 diabetes construct their experiences with protective and risk factors in their everyday lives amidst a pandemic?

Methods

To explore youth's everyday experiences, the researchers utilized a qualitative descriptive (QD) methodology applied through a constructivist paradigm. Aligned with the belief that individual understanding is facilitated through distinct interactions and experiences, constructivism aims to inform researchers of the development of

multiple complex subjective meanings of participant experience (Creswell & Poth, 2018; Sallay et al., 2021). Participant experience was examined within it's natural state through QD, prioritizing the "who, what, and where of events or experiences and gaining insight from informants regarding a poorly understood phenomenon" (Kim et al., 2017, p. 2). Features of QD, including semi-structured interviewing, purposeful sampling, and content analysis supplemented by data describing the study sample, are used within this study (Kim et al., 2017).

Setting and Participants

Participants were recruited from a recreation program serving youth with T1D held on a college campus. The program operated face-to-face before the pandemic, then switched to virtual programming to continue offering support to these youth. The overall program itself utilizes outcome-focused programming to promote positive youth development by focusing on an individual's strengths rather than deficits through curated activities and experiences available to participants (Witt, 2018). The program's overall aim is to encourage youth to engage in lifelong health and wellness behavior through a combination of diabetes education and traditional camping activities. The inclusion criteria were: T1D diagnosis at least one year prior to the beginning of the study, under the age of 18 years, and having participated in at least one program session during or before the pandemic. Program participants who met the inclusion criteria were invited to participate in a semi-structured interview related to their everyday experiences, including illness management and resilience.

After obtaining Institutional Review Board approval, potential participants were contacted through the program email list, which consisted of families of youth living with T1D. Families were initially emailed with details describing the study and research goals, and an invitation was additionally extended for parents to share the study's details with their children. Furthermore, the option to share study details and schedule correspondence directly with the participant was also provided, with the parent included in all correspondence. Three participants expressed interest in the study, and interviews were scheduled.

Study participants comprised Cleo, Ivan, and Jared, all youth participating in the medical specialty recreation program specific to diabetes education and management and provided pseudonyms. Cleo is a 10-year-old female who was diagnosed with T1D at the age of eight. She is currently in sixth grade, having matriculated from elementary school to middle school amid the transition from in-person schooling to synchronous/asynchronous learning during the fall of 2020. Cleo reported that she attempts to stay relatively active through team sports and other extracurricular activities such as volleyball and dance. Ivan is a 13-year-old male who was diagnosed with T1D at the age of eight, and Jared is a 13-year-old male who was diagnosed with T1D at 10 years old. Jared reported that much of his time is spent engaging in science, technology, engineering, and math (STEM) related extracurricular activities. Given the lack of access to typical recreational opportunities due to COVID-19, Ivan reported an increase in biking with his friends around his neighborhood. Video games were reported as a preferred extracurricular activity for Ivan and Jared, with increased time for all three youths to engage in technology-dominate recreation during COVID-19.

Data Collection

Semi-structured interviews were conducted with each participant following an interview protocol based on relevant literature. Interviews centered around each participant's everyday experience, including within frequently interacted-with settings (home, school, and out-of-school time programming), challenges and opportunities faced among changes influenced by COVID-19-related policy, as well as their experiences of disease management and resilience. The first and second authors conducted interviews (doctoral student and senior researcher, respectively). In contrast, the last author (senior qualitative researcher) offered discussion forums, guidance, and mentorship throughout the iterative process associated with qualitative inquiry. Through this configuration of expertise, shared knowledge between research members encouraged the required scaffolding between metatheoretical understandings and applied research methodology in the study (Berbary, 2015).

Example questions include, "Can you (tell me) describe what the typical day is like for you recently?" "Can you tell me (describe)

your current experience in school?" and "How do you feel about the way you have adapted to this new environment?" The interview protocol was reviewed by an expert in youth-centered research modalities (third author), and the pilot test was conducted with youth within the age range of the participants (Creswell & Poth, 2018). Feedback was used to modify the interview protocol used in the study (Agee, 2009).

Data Analysis

Data analysis was led by the first author, a youth development professional coordinating the recreation program; they are also experienced in qualitative research. Members of the research team engaged in ongoing discussions on analytic codes presented by the first author, reflections on the process, and preliminary results (Sally et al., 2021). After transcribing interview audio files verbatim according to the principles of QD methodology, interview transcripts were divided into relevant content units established by the research question using structural coding (Saldana, 2021). Following preliminary coding, concept coding was used to extract and synthesize data further, seeking possible patterns in both individual and collective interviews. Initial codes were then sorted based on interpersonal and individual-setting processes relevant to the study's aim. The thematic analysis allowed the researchers to reduce the likelihood of differentiating perspectives of findings within the research, encouraging straightforward presentation and representation of study findings (Kim et al., 2017). Themes were formed as an outcome of initial and subsequent coding of data, following an iterative approach required of qualitative inquiry.

Results

Structural and concept coding identified two main themes that describe and explain participants' everyday experiences of resilience and their context. Based on the processes that occurred within data analysis, varying degrees of transformation to both participant's physical and social environments during 2020 at the onset of the COVID-19 pandemic and continuing into the 2020-2021 academic year were identified. Their experiences were complex and shifted over time, evolving with social norms brought on by the global pandemic. Two themes describe the youth's reflections on their expe-

riences of change from familiar modalities of program delivery to remote experiences facilitated predominantly through technology, both communicative and medical.

Life at Home

Challenges and opportunities perceived by youth served as consequential factors to resilience characteristics and associated risk and protective factors present in their home environment. Jayden and Jared's shared access to integrative medical technology, such as continuous glucose monitoring (CGM) devices, provided constant readings of their glucose levels via Bluetooth connectivity, sending data gathered to their personal internet-enabled devices and to their parents. Ivan explained:

> I have the DEXCO CGM so they have an app on their phone that they can see my numbers cause if like, if I have my phone on like silence during school or something I can just check every once a while and see, "oh, I'm high, so I need to like do a correction." Or from my parents- if I just didn't get the alert somehow [on my phone] my parents can see and will tell me that I'm high, so I have [do] like a correction or whatever.

For Cleo, however, glucose levels are manually reported to adults around her, given the medical devices she can access. While at home during the day, Chloe explains, "If I have to go check my blood sugar or something, I'll just take my iPad and do what I need to do." When it came to advocating for her management of diabetes during her time in dance classes, she noted that "The instructors understood, and if I like, didn't feel good, I'd like, check my blood sugar and do what I need to do." Interactions with adults, including youth workers, presented strategic support when managing their diabetes, including independence.

In strong contrast, structural barriers to participation before transitioning to a virtual environment were much more of a concern for Ivan and Jared due to needing to make their way to their nurses' office physically. Jared noted that his fluctuating blood glucose levels often take away from his time with the group. Jared noted that his fluctuating blood glucose levels often takes time away from spending with his peer group at school. Similarly, Ivan reported that he felt

frustrated with the procedure in place requiring him to trek from one building to another to reach the nurse's office:

> Before lunch every day I had to walk all the way down to the nurse's office and it was frustrating because I couldn't get pass and you have to have these passes to unlock the door to the main building. So, I had to wait for someone to come to the door every day for like 15 minutes... But now I can just do my checks and stuff in class and just do all the things I need to do in class without the nurse.

Growth in Lieu of Change

Access to support, opportunities, programs, and services was limited compared to before the onset of the COVID-19 pandemic. Yet, Cleo, Ivan, and Jared's interaction with peers was recalled as rich in instances of engagement within various social environments despite physical barriers. All three youths reported experiencing changes in access to SOPS, which had the greatest impact on their daily schedule. Cleo recounted her typical week during the COVID-19 pandemic, with instruction during the first half of her day during the week, supplemented by walks and other leisure activities:

> So, I wake up, do school to about 11:45, eat lunch, do more schoolwork, and on Tuesdays and Wednesdays I have dance for an hour and a half. Other days I walk outside and stuff. The only thing that changed is doing school at home. Like, I still go to dance, but I mean, I would do volleyball, but they're not adding that because of COVID… the team I play for, they use a school gym so they can't use it unless we're in school.

Recreational opportunities like dance and volleyball for Cleo were limited by structural barriers brought on by COVID-19 that disallowed her from participating in all preferred recreational opportunities. Ivan also recalled his altered recreation opportunities and preferences due to the risk posed by COVID-19, describing his typical day as "very slow with time spent outside with friends that live down the street." In addition to using technology for diabetes management, the youth additionally utilized technology to stay con-

nected with friends. Both Ivan and Jared shared that they engaged in video game streaming with peers to stay connected despite physical barriers.

Although the modes of schooling were identified as different for participants, schooling was described as comparable to their prior experiences within the building aside from their ability to form new connections and relationships. Jared shared, "Face to face and being virtual… we're just sitting on our screen because face to face [we] would just look at a smart board." While the tools used for instruction were comparable to tools used prior, establishing new relationships with peers and adults was seemingly more difficult for Chloe and Ivan, while Jared sees the process of establishing new relationships and discussing their experience with diabetes management as the same, just "needing to do it virtually."

Chloe, Ivan, and Jared all agreed that they perceived peers as being supportive, regardless of the setting. To better understand their diagnosis and its impact on their everyday lives, peers will often ask participants questions about diabetes management. Chloe shared, "They asked questions, but they don't treat me any different." Similarly, in one instance for Ivan, the sharing of diagnosis with a peer encouraged the exchange of diagnosis information and deepened their connection, "So I told my friend that I had diabetes. He told me that he had Lyme disease. So, we had like, a whole conversation about how it's like hard to have like incurable diseases it was nice relate." Ivan shared, "there's no way to like talk over the Zoom meeting. It's pretty hard to make friends over Zoom meeting." Activities like standing in line for food, chatting with peers during transition periods such as moving between classes, and other activities allowed youth to socialize and practice skills that facilitated relationship-building efforts.

Discussion

The purpose of this study was to explore how youth with type 1 diabetes construct their experiences with protective and risk factors in their everyday lives during a pandemic. For this group of youth, risk factors present within their lives were counteracted by creative means to stay connected with significant adults and peers despite access restrictions. Although Chloe, Jared, and Ivan were provided fewer opportunities to access supports, opportunities, programs, and

services (SOPS) during the time of the study, protective factors such as increased support from household members, peer relationships, and independence were still present in their lives (Wolin & Wolin, 1993). Other researchers have documented indicators of resilience for youth living with chronic illnesses such as T1D (Boman et al., 2017; Liesch & Elertson, 2020; Weissberg-Benchell & Rychlik, 2017), which given these youth's experiences, extends to their lives within a sustained high-risk environment exasperated by COVID-19. Consistent with the findings from Liesch and Elertson (2020), the youth presented characteristics of "resilience through acknowledgment of difficulties… coupled with plans for future success" (p. 1162). Given the COVID-19 policy requiring social distancing in addition to other virus mitigation strategies, Cleo, Ivan, and Jared found themselves mostly telecommunicating with other adults and peers outside of their households using software such as tablets, cellphones, and other smart devices that supported communication with other devices connected to supporting networks. While a large concentration of indispensable interactions was now reliant on technology as the required medium, the integration of internet-connected devices is not unfamiliar to the youth.

The youths' experiences of navigating risk associated with managing their T1D changed as they transitioned to the virtual setting. The additional layer of accountability afforded by parental access to CGM data reduced youth's likelihood of encountering structural disablism through their exclusion from and opportunities to engage in both physical and social settings. Ivan experienced situations that, according to Thomas (2004), resulted in his exclusion from preferred activities with his peers due to structural barriers preventing timely access to the required medical personnel in the school building. Jared additionally expressed dissatisfaction with opportunities to engage in class due to diabetes management obligations. Much of this difference could be explained by their stages in development, with Ivan and Jared matriculating from middle school to high school during 2020-2022, while Chloe is currently transitioning from elementary school to high school. In other words, the psychosocial needs relevant to their developmental stages place different emphasis on the social landscapes that will be engaged in (Liesch & Elertson, 2020).

All three youths prioritized time spent with friends and family, recognizing their importance during the pandemic, thereby enabling them to sustain that relationship via technology use (Witt, 2018; Wolin & Wolin, 1993). Feeling connected is tied to experiencing resilience through forming relationships, a trait of resilient individuals (Browne & Wycoff, 2021; Wolin & Wolin, 1993). While preferred SOPS were unavailable for the youth, they could maintain relationships established before the pandemic. Youth experienced resilience when opportunities were available to engage with those that matter to them. Time shared with others was one way individuals in the youths' support system demonstrated understanding and support. Despite the modality of connection migrating to predominantly virtual spaces, positive social relationships were maintained and countered to risks such as isolation and loneliness (Huston et al., 2016).

In conclusion, understanding how youth experience resilience during sustained environmental risk (i.e., a global pandemic) is paramount in creating meaningful SOPS in which all youth can participate. The perspectives shared by Chloe, Jared, and Ivan bring attention to the impact of protective factors attributed to resilience on their experiences amid the COVID-19 pandemic. Building on already present relationships through meaningful interaction can deepen the relationship already present with a peer. Yet, opportunities to engage in conversation during transitional periods were minimized for youth to meaningfully engage with one another within the virtual environments. Questioning the presence of traits associated with resilience experienced by the youth explained some of the potential risks associated with living with T1D, including the structural barriers preventing them from fully engaging in activities with peers (Liesch & Elertson, 2020). The experiences of Chloe, Jared, and Ivan brought attention to the importance of opportunities to build connections and the need for innovative ways SOPS providers can continue to facilitate positive youth development during these dynamic times.

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PHYSICAL ACTIVITY

Effects of a Physical Activity and Public Health Course on Exercise Behavior, Perceived Exercise, and Technology Dependence

Hakan Taş, Oğuzhan Yolcu,
Irmak Hürmeriç Altunsöz, and Ahmet Yıldırım

Abstract

The purpose of this study was twofold: 1) to examine the effect of physical activity and public health courses on perceived exercise benefits/barriers, stages of exercise behavior change, and technology dependence of undergraduate students, and 2) to explain how the physical activity and public health course supports undergraduate students in terms of physical activity awareness. Data were gathered from 47 university students ($n_{experimental\ group}$=27, $n_{control\ group}$ = 20) in an urban area public university. Participants in the experimental group attended a 13-week classroom-based physical activity and public health course. The control group just participated in their regular courses. Data were collected from three different questionnaires: stages of exercise behavior change, perceptions of exercise benefits/barriers, and technology

Hakan Taş; Department of Physical Education and Sports, Faculty of Education, Middle East Technical University, Ankara, Türkiye; Oğuzhan Yolcu; Department of Physical Education and Sports, Faculty of Education, Amasya University, Amasya, Türkiye; Irmak Hürmeriç Altunsöz; Department of Physical Education and Sports, Faculty of Education, Middle East Technical University, Ankara, Türkiye; Ahmet Yıldırım; Office of Sports, Middle East Technical University, Ankara, Türkiye. Please send author correspondence to yahmet@metu.edu.tr.

dependence of university students at pre-tests and post-tests. Semi-structured interviews were also conducted with 8 participants in the experimental group. Results showed that there was not any statistically significant difference between pre-test and post-test results on technology dependence and perceived exercise benefits/barriers. In terms of stages of exercise behavior change, students in the experimental group were more active than those in the control group in the post-test. Semi-structured interviews revealed that students learn about physical activity and its benefits, as well as the importance of infrastructure in participating in physical activity. They also tend to be more active than they were in the past. Although they did not change their technology usage, they searched for useful content related to nutrition and physical activity plans. In conclusion, according to their expression, they increased their knowledge and awareness of physical activity and its impact on public health. Further studies might integrate the practical sessions into this type of intervention to evaluate its effectiveness on perceived benefits/barriers, physical activity level, and technology dependence of university students.

Introduction

Common chronic diseases, such as obesity and cardiovascular problems, are caused by civilization (Reiner et al., 2013). These diseases are defined as noncommunicable diseases (NCDs), and almost 41 million people passed away due to NCDs (World Health Organization [WHO], 2022), causing 74% of all deaths worldwide (WHO, n.d.). These diseases result from unhealthy lifestyles such as physical inactivity (Reiner et al., 2013). While physical activity (PA) is defined as any bodily movement using energy expenditure produced by muscles, PA is defined as an inadequate PA level or a PA level below the global PA recommendations (Bull et al., 2020). In order to decrease diseases related to inactive lifestyles, the WHO published PA recommendations for children, adults, and older adults. For instance, children should participate in PA for at least 60 minutes daily. The more they engage in PA, the more benefits they have. Adults should engage in 150-300 minutes of moderate to vigorous physical activity (MVPA) per week (Bull et al., 2020). Older adults should participate in multicomponent PA at least three times a week (Bull et al., 2020).

Regular physical activity participation has many health benefits (Coppola et al., 2020; Crozier & Spink, 2017), and it prevents many chronic health problems such as cancer, cardiovascular disease (Crozier & Spink, 2017; Scarapicchia et al., 2017), stroke, hypertension (Irwin, 2004), and diabetes (Guerin et al., 2019). Regular PA has health, physiological, and psychosocial benefits (Bedard et al., 2017) for different groups and socioeconomic statuses (Tremblay et al., 2011). In addition to regular PA, exercising helps to increase cognitive function, improve performance on cognitive tasks, and increase academic achievement (Crozier & Spink, 2017). Moreover, it decreases mental illnesses such as depression (Guerin et al., 2019; Scarapicchia et al., 2017).

Although regular PA has numerous health benefits, participating in PA decreases significantly with age (Irwin, 2004). Research findings revealed that youth and adults did not meet the recommended level of PA (Scarapicchia et al., 2017). For instance, Bull and colleagues (2020) revealed that 81% of adolescents did not meet recommendations for aerobic exercise. Another study showed that more than half of first-year university students are doing PA below the recommended level (Brown et al., 2014). Likewise, another research finding showed that most students in college or university did not engage in PA (Bray & Kwan, 2006), and more than half of Canadian and American university students did not engage in a sufficient level of PA (Irwin, 2004). Similar findings have been reported in the Turkish context (Cengiz, 2009; Ölçücü et al., 2015; Özkan et al., 2015; Vassigh, 2012). Identifying factors associated with physical inactivity plays a critical role in overcoming the barriers to PA participation (Towne et al., 2017). Technology usage may cause university students to engage in less physical activity since it disrupts their daily routines and activities (Alotaibi et al., 2020; Boz, 2020). Knowledge about PA might be another barrier for participation in PA, as stated in previous research (Fredriksson et al., 2018; Martins et al., 2019).

Some effective approaches to overcoming physical inactivity problems include informational, school-based, behavioral-social, environmental, and policy approaches (Kohl et al., 2019). One is classroom-based health education programs that are part of informational approaches for promoting PA. In this approach, people are

given information related to PA to encourage and empower them to modify their behavior and sustain that change over time (Kahn et al., 2002). The dissemination of information aims to change one's perceptions of the advantages of PA, increase awareness of specific local opportunities for increasing PA levels, describe ways to avoid barriers, and struggle with unfavorable attitudes and perceptions toward physical activity (Kahn et al., 2002). A recent systematic review indicated that a classroom-based approach is a potentially beneficial strategy for enhancing PA despite the current evidence's mixed views on the effectiveness of this type of intervention in doing so (Lee et al., 2022). It should be emphasized that research studies typically enroll students from elementary school through high school. Class-based PA approaches at the university level are rare in the literature. For this reason, the primary purpose of this study was to examine the effect of physical activity and public health courses on perceived exercise benefits/barriers, stages of exercise behavior change, and technology dependence of undergraduate students. The second purpose of the study was to explain how the physical activity and public health course supports undergraduate students in terms of PA awareness. The following research questions were examined in this study:

- Does the physical activity and public health course significantly affect university students' perceived exercise benefits/barriers, stages of exercise behavior change, and technology dependence?
- How do undergraduate students perceive the physical activity and public health course as supporting their PA behavior?

Materials and Method

Participants and Settings

In the pretests of the study, data were gathered from 61 students ($n_{\text{experimental group}}$= 31, n_{control}=30). In the post-test, however, some participants withdrew from the study or did not complete the questionnaires. As a result, data were gathered from 47 university students ($n_{\text{experimental group}}$=27, $n_{\text{control group}}$=20) at an urban area public university in the post-test. All ethical issues were considered before conducting the study. All participants were involved in the study voluntarily. The experimental group enrolled in an elective physical activity and

public health course offered to undergraduate students. The control group enrolled in another course unrelated to physical activity and public health.

Physical Activity and Public Health Course

The main aim of the course was to enhance university students' knowledge and increase their awareness about the role of PA in public health. It was a 13-week synchronous online course. Each session lasted for approximately 2 hours. The course content was created based on the foundations of PA and public health and the current literature on PA. This course was divided into three major parts. The first part, lasting three weeks, included basic concepts and definitions of PA, public health, global PA guidelines, and physical activity measurement techniques. The second part, lasting five weeks, was composed of the health effects of PA participation, such as obesity, cancer, cardiovascular health, musculoskeletal health, and risk factors of doing physical activity. The third part, lasting three weeks, focused on the effective PA interventions in the literature.

The course instructor was one of the researchers in this study. She has ten years of experience in teaching physical activity and public health. Various teaching methods were applied in the course. For instance, lectures, classroom discussions, video presentations, and class activities were used as the teaching strategies in the course. At the end of each session, three students were responsible for preparing a 15-minute oral presentation about the recent research on physical activity. They shared one research article, news, and video about their topic during the student presentations. In addition, students had one mid-term and one final exam.

Measurement Tools

In this study, the data were collected from three different questionnaires: the stages of exercise behavior change (Marcus & Lewis, 2003), perceptions of exercise benefits/barriers (Sechrist et al., 1987), and technology dependence of university students (Aydın, 2017). These questionnaires are explained in detail below. In addition to these questionnaires, a demographic information form was designed to gather detailed information about the participants regarding their gender, age, perceived health status, screen time, and general physi-

cal activity behaviors. Online face-to-face semi-structured interviews were used as a data source for the qualitative phase.

Stages of Exercise Behavior Change Questionnaire

The Stages of the Exercise Behavior Change Questionnaire was developed by Marcus and Lewis (2003) and adapted to the Turkish context (Cengiz et al., 2008). The questionnaire asks four questions about people's current physical activity behaviors. Based on the answer, participants are in the pre-contemplation, contemplation, preparation, action, and maintenance stages. The first three stages (pre-contemplation, contemplation, and preparation) show that participants are inactive, and the last two (action and maintenance) show that participants are active. It takes one minute to fill it out.

Perceptions of Exercise Benefits/Barriers Scale

The Exercise Benefits/Barriers Scale (EBBS) questionnaire was developed by Sechrist et al. (1987), and it was adapted to the Turkish context by Ortabağ and colleagues (2010). External consistency was excellent (Cronbach's $\alpha = 0.87$), and the test-retest reliability was .85 (Ortabağ et al., 2010). The questionnaire includes 43 questions based on a 4-point Likert Scale from "Strongly Disagree" (1) to "Strongly Agree" (4). The score of the questionnaire is from 43 to 172 points. Because an overall score was considered, the barrier items in the questionnaire were reversed.

Technology Dependency of University Students

The Technology Dependence Scale was used to determine university students' technology-dependence behaviors. The scale was developed by Aydın (2017) and consists of 24 questions to measure four different subscales of social network addiction, instant messaging addiction, online gaming addiction, and website addiction. The questions in the scale were answered based on a 5-point Likert type from Never (1) to Always (5). Scale scores range from 24 to 120. The scores are interpreted as not dependent (0-24), low dependent (25-48), moderately dependent (49-72), very dependent (73-96), and entirely dependent (97-120). The scale of internal consistency was .786 for social network addiction, .806 for instant messaging addiction, .897 for online game addiction, and .861 for website addiction.

Procedures

The data was gathered in the fall semester of 2021-2022. The ethical approval form was obtained from the Applied Ethics Research Center, Ethics Committee on Human Researches. Consent forms were also gathered from the university students who participated in the study. All instruments were applied online during the course hour. It took 10 to 15 minutes to fill out the questionnaires. In addition, semi-structured interviews were conducted at the end of the semester with students in the experimental group. Participants were invited to the interviews to collect qualitative data by email voluntarily.

Overall Study Design

This study used an explanatory sequential mixed method as a research method (Creswell & Creswell, 2017). In the exploratory sequential mixed method, the quantitative data is first collected and analyzed; then, the qualitative data is used to understand the quantitative results in depth. In the quantitative part of the study, a quasi-experimental nonequivalent control group design was used (Cambell & Stanley, 1996). A quasi-experimental design is used when random sampling cannot be applied. The non-equivalent control group design is used in cases where both groups cannot achieve sample equality. Pre-test and post-test are applied to both groups. The basic qualitative research design was used in the qualitative part of the study. The basic qualitative research design is carried out without any additional context to understand the participants' thoughts about their experience (Merriam & Tisdell, 2015).

Qualitative Phase of Study

Qualitative research deals with the meanings attributed to their experiences by people and how they interpret their experiences (Merriam & Tisdell, 2015). Qualitative research has many data sources (interviews, field notes, observations, documents, video and voice records, etc.). Interviews were conducted at the end of the semester after getting the quantitative data analysis results.

The semi-structured interview questions were shaped according to the research questions and the quantitative data analysis. Since the interviews were conducted at the end of the semester, on a voluntary basis, eight students could be reached. Yet, data saturation has

been reached, and qualitative results have been used to understand quantitative results more deeply. Examples of the semi-structured interview questions are as follows:

- Is there any change in your opinion about physical activity and public health? If yes, what are these changes?
- What are the reasons that prevent you from exercising?
- How did the physical activity and public health course affect the use of technology in your life?

Data Analysis

Quantitative Data Analysis

In this study, descriptive and inferential statistics were used by using SPSS 28. The mean value of students' exercise benefits and barriers and the technology dependence scale were presented for descriptive statistics. For the inferential statistics, one-way MANOVA was run to determine the group difference. In addition, paired t-tests were used to understand the pre and post-test differences. Before running a one-way MANOVA, researchers must consider some requirements. These requirements include sample size, normality histogram, skewness, and kurtosis values. For the absence of multivariate outliers, Cook's distance and Leverage value were used; for the absence of multicollinearity among dependent variables, Pearson correlation (*r*) was used; for homogeneity of variance, Levene's test was used. The Box M test was used for the homogeneity of the variance-covariance matrix. For sample size requirements, each group's recommended minimum sample size was 20 observations (Hair et al., 2014). These requirements were tested, and assumptions were not violated. Then, a one-way MANOVA was run. Alpha level was set at .05.

Qualitative Data Analysis

One of the researchers transcribed and organized voice records. Moreover, another researcher checked the transcripts by comparing them with the voice recordings. Thematic analysis was used to analyze the qualitative data. In thematic analysis, patterns in qualitative data are identified and analyzed (Kiger & Varpio, 2020). Preliminary codes were assigned when reviewing the transcripts. Themes and patterns were searched within the codes. The themes created from

the codes were examined, named, and defined. The themes created were examined by another researcher who was not involved in the qualitative phase of the process for trustworthiness. The MAXQDA 2022 software was used for the analysis of qualitative data.

Results

Baseline information of students

First, Box M was considered for homogeneity of the variance-covariance matrix. The results showed that it was not violated, F (3, 649994.24) = .047, $p > .05$. Thus, Wilks' Lambda was interpreted for the multivariate test. The results showed that there was no significant effect of groups on dependent variables Wilks' $\lambda = .98$, F (2, 58) = .585, $p > .05$. There were two dependent variables in the main test; thus, the alpha level had to be divided in two, so a new alpha level of.025 was set. The results of one-way MANOVA revealed that there was no significant effect of the group on exercise benefits and barriers F (1, 59) = .487, $p > .025$, and there was no significant effect of groups on technology dependence F (1, 59) = .587, $p > .025$.

The Main Result

The total number of participants was 47 students (experimental group=27, control group= 20) in the post-test. Their age was 23 (*SD* = 5.09), height was 170.63 (*SD* = 10.74), and weight was 67.04 (*SD* = 14.64). In terms of groups, the experimental groups' age (*M* = 24.48, *SD*=6.12) and the control groups' age (*M* = 21, SD=2.05) are almost similar.

According to the exercise stage of change results, students were generally in contemplation (*n*=20), preparation (*n*=13), and maintenance stage (*n*=19) in the pre-test and contemplation (*n*= 20), preparation (*n*=10), and maintenance stage (*n*=13) in the post-test. In terms of groups, the control group was more inactive (*n*=14) than the experimental group (*n*=9) in the pre-test. Students in experimental groups showed that they were more active (*n*=12) than control groups (*n*=4) in the post-test (Table 1). Thus, students' motivation toward physical activity decreased in the control group but remained the same for students in the experimental group during the study.

Table 1
Exercise Stage of Change

	Experimental group		Control group	
	Pre-test	Post-test	Pre-test	Post-test
Pre-contemplation	1	1	2	0
Contemplation	8	9	12	11
Preparation	7	5	6	5
Action	3	3	3	0
Maintenance	12	9	7	4
Total	31	27	30	20

Students indicated that they seem themselves moderate (n=7), good (n=22), and very good (n=12) in health condition. In terms of groups, both groups of students indicated that their health condition was good (experimental group=15, control group=7). In addition, they stated that 17 of them participated in physical activity regularly. In terms of groups, more students in the experimental group participated in an activity regularly (n= 12) than students in the control group (n=5).

In the post-test, one-way MANOVA was run to determine group differences in exercise benefits, barriers, and technology dependence. First of all, Levene's test of equality of Error variances was considered, and the assumption of homogeneity of variance was violated for the technology dependence tool. Thus, the new alpha value was set at .04. Then, the Box M test was considered for the homogeneity of the variance-covariance matrix. The results showed that it was not violated, F (3, 168801.41) = 1.81, $p > .05$. Thus, Wilks' Lambda was interpreted for the multivariate test. The results showed that there was no significant effect of groups on dependent variables Wilks' $\lambda = .96$, F (2, 44) = .839, $p > .05$. In the main test, because there were two dependent variables, the alpha level had to be divided into two, a new alpha level was set .025 for exercise benefits and barriers tool, .020 for technology dependence tool. The results showed that there was no significant effect of the group experiment (M = 142.96, SD = 16.06) and control group (M = 142.30, SD = 16.90) on exercise benefits and barriers F (1, 45) = .019, $p > .025$. There was no significant

effect of the group's experiment (M = 57.51, SD = 21.59) and control group (M = 50.45, SD = 13.06) on technology dependence F (1, 45) = 1.68, $p > .020$.

In addition to group difference results, paired t-test results of exercise benefits and barriers revealed a statistically significant difference between the experimental group's pre-test (M = 127.11, SD = 13.84) and post-test (M = 142.96, SD = 16.06); t (26) = 6.68, $p < .05$; and the control group's pre-test (M = 121.70, SD = 11.84) and post-test (M = 142.30, SD = 16.90); t (19) = 5.43, $p < .05$. However, the result of pre and post-test of technology dependence showed that there was not any statistically significant difference between the pre-test (M = 56, SD = 16.60) and post-test (M = 57.52, SD = 21.59) of the experimental group; t (26) = .684, $p > .05$, no significant difference between the pre-test (M =52.80, SD = 13.55) and post-test (M = 50.45, SD = 13.06) of the control group; t (19) = 1.12, $p > .05$.

Table 2
Themes and Sub-themes

Themes	Sub-themes
Reason for Selection of class	Personal interest
	Necessity of an elective course
Knowledge of PA and Public Health	Health effects of PA
	Chronic diseases
Barriers to physical activity participation	Physical fatigue
	Mental fatigue
	Classes
Technology	Content of technology
	Technology usage for PA

Qualitative Results

This section presents the key findings from semi-structured interviews with the participants who attended the course in this study. The interviews aimed to understand the participants' perceptions of the course and the underlying structure of the quantitative results. Four main themes were revealed as a result of the thematic analysis. Table 2 shows the themes and sub-themes determined through thematic analysis.

Reasons for the Course Selection

Students' interviews revealed two main reasons for selecting the course. One was "personal interest in physical activity," and the second was "necessity of selecting an elective course." Interviewers with a personal interest in courses have various reasons. Most of them stated that they are already doing sports or physical activities. One of the participants stated that he was a coach at certain periods of his life, so he was interested in the course. Another participant mentioned that she was already a physical education teacher, and she explained the reasons for the selection of the course as follows:

> When I looked at it as a teacher, I already noticed that the students in the classes I entered had eating disorders. I've taken classes on these before. I was noticing that the sports they did were often wrong and that the perception of sports especially among students was wrong lately. I was thinking about what information I could gain so that maybe I could use it in my field.

According to the university's curriculum, in which the study was conducted, students have to choose an elective course from another faculty member. Some participants mentioned that as a reason for choosing the Public Health and Physical Activity course.

Knowledge of Physical Activity and Public Health

Regarding the knowledge of physical activity and public health, interviews also indicated that the effect of overdose physical activity on the body and the role of physical activity in preventing disorders attracted participants' attention. Some participants stated they already knew the importance of physical activity in health. However, they stated that they realized that the information they had previously obtained was insufficient or that it was hearsay. Participant 2 explained her thoughts on the effect of physical activity on health before the course as follows:

> I always thought that physical activity had nothing to do with cancer. Honestly, it didn't seem relevant to me. If I had seen it somewhere, I would probably have thought it wouldn't be very accurate. I saw that this thought was the complete opposite.

Some students who chose this course from different faculties as a requirement of the curriculum stated that they discovered how physical activity could be related to their field. An undergraduate student from civil engineering (Participant 5) mentioned how he noticed the connection between physical activity and civil engineering:

> Before I researched these recreation areas, in particular, I thought that these areas were chosen randomly, that is, an empty area was used there, but it wasn't. In other words, I learned from the course that the recreation areas should be in a place where people can reach, especially that they should be used by all people.

Some of the participants were already paying attention to being more active during the day. Participants who stated that they had previous knowledge about physical activity were found to have connections with sports in their interviews. Their connections with sports are as follows: those who regularly do sports before class, study at the faculty of physical education and sports, do professional sports before, and do bodybuilding.

On the other hand, some of them mentioned that during the course, they changed their daily behaviors to be more active after realizing that even small changes can make a difference. Such as "using stairs instead of elevators," "getting off the bus one stop earlier," "doing sports outdoors instead of indoors," and "preferring to walk short distances." As an example of this theme participant 1 mentioned the changes in her behavior:

> I reduced the use of elevators at school and in the institution where I work. You know, I'm on vacation right now, it's like walking for half an hour today, and swimming tomorrow. I choose to engage in slightly different activities and this prevents me from getting bored. Frankly, I planned this as an "experience" based on the topics we talked about in the lesson.

Barriers

In the interview on the reasons that prevent them from doing physical activity, the most mentioned barrier to physical activity

was mental and physical fatigue. The intensity of the lectures and the excess of time spent studying for exams and homework were the reasons for the participant's mental and physical fatigue. Other reasons were weather, motivation, exhaustion, time, work, and courses. Participant 1 mentioned mental fatigue as follows:

> There may be mental fatigue in general. In other words, I may be doing something like this because I like to sit down and do something else at that moment, or I'm already very tired today, and I'm even more tired if I do this right now. I can wake up more tired tomorrow etc. I have thoughts like that.

According to participant 5, the reason for the change between measurements is as follows:

> The difference between the two surveys for me was that I was able to do sports regularly at the time of the first survey, but now I've been working for about two months and the study impressed me a lot. Frankly, in that situation, time and fatigue prevent me from doing sports. That's why my two surveys were very different.

Some of the interviewees mentioned that the things that they learned in course have helped them overcome the barriers. Some quotes from the interviews on the subject are below. Participant 3 mentioned, "After the course, I realized the thing that I said to my friend, 'Let's go for a walk. Let's not drive to our destination.' For example, I was always doing things like this. If nothing else, this was a relief for me, at least it helped me in such a way."

Additionally, Participant 7 explained the change as follows: "… In that stressful period, I used to stop doing activities, in fact, I realized that when I do not do activities, I do not spare more time for myself and my productivity drops a lot. After this lesson, I started not to quit activities anymore. I mean, I went for a walk or something during the exam period."

One participant became more knowledgeable about factors directly affecting physical activity and participation. Participant 4 said, "I learned that physical activity is affected by many variables, such as environmental policy."

Technology

As indicated by the analysis of interviews, most of the participants in the experimental group were already conscious of the use of social media before the course. Five out of eight participants mentioned that they already use technology when it is necessary before the class. Therefore, they stated that there was little change in the time spent using technology due to physical activity and public health courses. Participant 4 emphasizes her usage of technology as follows:

> I already use the computer in mandatory situations, that is, when I do work or homework. I didn't have a lot of technology dependence anyway. I usually use the phone as a computer in places where there is no computer. Other than that, I didn't have a lot of technology before. I wasn't the type of person who wouldn't let go of her phone.

One of the participants stated that he questioned whether his use of social media was in line with the information they had learned during the course. However, he mentioned that there was no change in her behavior.

On the other hand, most of the participants stated that the content they were interested in or researched on social media changed in line with what they learned in the course. Participant 7 emphasized the change in the content of the usage of social media:

> I saw that there are many branches of this subject that I do not know. That's why it has been added to my research. In a way, I started researching new areas that I did not know. Even though the course is over, I'm still trying to read. There has definitely been a change in that respect as much as possible

Participant 4 shared:

> You know, in addition to this physical activity, I searched for meal plans that could help with the sports I did a little more so that I could fix some eating disorders at least during this 2-week vacation. I also looked at the thing, how can I diversify the sport I do, that is, if I walk for half an hour or if I walk for half an hour and then cycle for 15 minutes? For

example, I looked at these plans to see what examples are available. I looked yesterday too.

Some participants froze their Instagram accounts during the course. For instance, Participant 2 said that "time consumed in websites or social media were not increased. In fact, these were decreased. I did close my social media account," while Participant 8 said, "After the discussion in the public health and physical activity course, I had an opportunity to think about it and I did freeze my social media account."

Overall, even though the duration of internet usage was not changed, participants used technology and spent more time on the internet after they took the public health and physical activity course. Some participants became more aware of what they do in daily life regarding technology.

Discussion

This study's primary purpose was to examine the effect of physical activity and public health courses on perceived exercise benefits/barriers, exercise stages of behavior change, and technology dependence of undergraduate students in a public university in Turkey. Furthermore, the study was to investigate how the physical activity and public health course supports undergraduate students in terms of physical activity awareness. Findings showed that students in both groups were moderately dependent on technology. Statistical results also showed no statistically significant difference between pre-test and post-test results on the technology dependence in both groups.

In national and international literature, a body of research investigated the technology dependency of students of various ages. Karadağ and Kılıç (2019), for example, found that students in primary, secondary, and high school were heavily reliant on technology, particularly social media, online games, and text messages. Another research revealed that senior university students were moderately addicted to technology, and they did not find a negative relationship between technology addiction and sports participation among university students (Yaman, 2021). In the international literature, almost all participants in one study used technological tools in one form or another (Amudhan et al., 2022), and technology addiction decreases while age increases (Sharma et al., 2017) and the most

common internet addiction is social media that is used for communication (Brooks et al., 2016). Technology dependence might become a common problem worldwide. It is known that technology dependence was significantly associated with risk factors including, anxiety, depression, and loneliness (Amudhan et al., 2022; Sigerson et al., 2017), and academic success was negatively correlated with internet addiction (Sert et al., 2019) and study-related use of the internet has a positive impact on academic performance (Abbasi et al., 2021). In addition, studies in the literature concluded that there is a negative relationship between technology addiction and the physical activity of participants (Abbasi et al., 2021; Ercan et al., 2021; Yaman, 2021) technology addiction and health outcomes (Eliaçık et al., 2016), social media addiction and perceived health (Chen et al., 2022) and positive relationship between physical inactivity and smartphone use (Pereira et al., 2020).

University students in our study were moderately addicted to technology, and the intervention had neither a negative nor positive effect on their perceived exercise benefits and barriers. The reason might be that (a) the public health and physical activity course was done online, (b) the course did not include practical parts, (c) the course was done in pandemic situations. In addition, most of the intervention group participants mentioned that they already used technology consciously before the course. However, qualitative results indicated that although they did not change the time they spent on technology usage, they gained knowledge about PA while using technology more than before they took the course. Some participants expressed that they have been watching informative videos on the internet. Furthermore, many stated that they did freeze social media accounts during this process. In conclusion, there was no difference in technology usage in both groups regarding quantitative results. The experimental group changed their behavior with technology and its usage.

This study considered exercise benefits and barriers scores as overall scores but not divided. Findings of perceived exercise benefits/barriers indicated no statistically significant difference between students who received PA and public health courses and those who did not. The results showed that university students had high perceived exercise benefits/barriers in the post-test and they increased

their perceived score from the pre-test to the post-test. However, it seemed that the intervention did not affect their perceived score. Based on Turkish literature, some studies about perceived exercise/ barriers exist. For instance, participants over 18 had a 99.79 mean score from total instruments in the university hospital. There is a relationship between participation in exercise and perceived exercise benefits/ barriers (Ersin et al., 2022). Another study was done with sixty-nine mothers with children with different motor functional statuses. The researcher evaluated the mother's exercise benefits/ barriers scale item by item. They reported most frequently that "exercise takes too much time from family relationships" as a barrier and "Exercising will keep me from having high blood pressure" as a benefit. The range was from 45 to 133 for participants (Özkan & Numanoğlu-Akbaş, 2021). In the literature, perceived exercise benefits/barriers were applied to different contexts, such as medical students (Blake et al., 2016; Chung-Yan Chan, 2014), nurses (Bakır & Macit Hisar, 2016), patients in hospitals (Karataş & Polat, 2021), physicians and nurses (Gabal et al., 2020). Ransdell and colleagues (2004) conducted a 12-week home-based and university-based physical activity intervention with mother-daughter pairs. They found similar results as we did. Participants' perceptions about exercise benefits and barriers did not change after the intervention, although they had practice sessions during the intervention period (Ransdell et al., 2004).

In addition to quantitative analysis, interview results about perceived barriers to exercise showed that the intensity of the lectures in their curriculum and the excess of time spent studying for exams and homework are the main reasons that prevent them from exercising. However, some participants expressed the idea differently than the quantitative results. After taking the course, one participant realized that PA should be planned; another stated that any movement or action, such as walking, jumping, or basic movement, could contribute to his/her daily PA level. Furthermore, one participant realized that PA and public health do not just depend on one variable, but policy, environment, and infrastructure of the neighborhood play a significant role in physical activity participation and level. For instance, some studies showed that environmental variables might play an important role in PA in different settings (De Greef et

al., 2011; Dong & Liu, 2022; Gou et al., 2021; Halali et al., 2016; Xu et al., 2010). Thus, participants became more knowledgeable about physical activity and public health. In conclusion, students' perceived benefits, barrier scores, physical activity knowledge, and awareness were increased after the intervention. Awareness of the positive outcome (Alkerwi et al., 2015) and lack of education about the benefits of physical activity (Kolt et al., 2006) might play an important role in participation in physical activity.

Based on the results of the exercise stage of behavior change, university students in both groups were mainly in the contemplation and preparation stages. In terms of the group, students in the control group were more inactive than students in the experimental group. The experimental group had more participants in the action and maintenance stages than the control group. Previous studies indicated that boys and girls (Cengiz, 2009) and more than half of university students (Miçooğulları et al., 2010; Oral & Aktop, 2014) and most female students in a faculty of sports science (İmamoğlu, 2020) were in pre-contemplation, contemplation and preparation stage. Thus, participants were mainly inactive; however, after the intervention, students stayed active compared to the control group. It may be why students become more aware of their behaviors and are more active than in previous times. Additionally, considering the reasons for choosing the course, most of the experimental group participants who took part in the semi-structured interviews stated that they had a background in PA and sports or that they were currently paying attention to participating in PA, which probably explains the fact that participants from the experimental group are more in the action stage.

Limitations

This study has strengths and some limitations. The main strength of this study was that data were gathered from qualitative and quantitative approaches. It gives a holistic approach to deeply analyzing the current situation in research settings. Although participants in the experimental group did not change their perception toward exercise, they changed their habits toward PA. For instance, one participant stated that s/he used to use elevators at school, but after the class, s/he tends to use stairs or can change their physical activities when s/he gets bored because s/he knows how to plan activities.

Another participant realized that s/he said to friends, "*Let's go for a walk, not drive to our destination*." The study's main limitation was that the number of participants decreased from the pre-test to the post-test. This might limit the conclusions of the quantitative results of the study. Another limitation is that the intervention course was theoretical. Due to the structure of the elective course, the rules have been determined by the curriculum. Taking only one course might not change participants' perceptions of PA and exercise. Further studies should consider the role of both theoretical and practical sessions of PA courses on university students' attitudes, beliefs, perceptions, and PA behaviors. It should also be noted that the course was taught as an online course due to the COVID-19 pandemic reasons. Moreover, there were certain restrictions on going outdoors and to the gym during the pandemic. These factors may affect the results of the study.

Conclusion

This intervention study aimed to examine the effect of physical activity and public health courses on perceived exercise benefits/barriers, exercise stages of behavior change, and technology dependence of undergraduate students. Although the statistical analysis did not show any improvement in perceived exercise benefits/barriers and technology dependence, semi-structured interviews showed that university students increased their awareness and knowledge about PA, and they became more knowledgeable about how to do physical activities or doing any bodily movement may contribute to their PA level. In addition, they used technology to improve their knowledge about PA. In their daily life, they stated that they prefer a more active life than taking PA and public health courses such as using stairs instead of elevators. It should be noted that further research is needed to provide evidence of the effectiveness of other types of approaches in university-based PA courses. Thus, future researchers might add a practical session to the PA and public health course to evaluate students' general perceptions of PA and their PA level. In addition, objective measurement tools such as accelerometers and pedometers are needed to determine university students' PA levels before and after taking this course. The number of university-based PA courses might be increased to support community public health.

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PHYSICAL ACTIVITY

Effect of Sensory Stimulation in Physical Activity on Memory, Reading, and Classroom Behavior in Elementary Students

Maryann Mitts, Cathy D. Lirgg, and Eric Lange

Abstract

During a six-week period, students in Grades 1-5 participated in 15 sensory activities that focused on processing and integration motor skills. The intervention group participated in 20 minutes of the Minds in Motion maze (10 minutes in the morning and afternoon) while the control group continued with normal school activities. Pre and post difference scores of the dependent variables (Auditory Memory Test, Developmental Reading Assessment, and Office Referrals) were calculated. Manova results showed that the intervention group scored higher than the control on the auditory memory test. Groups did not differ on reading level or classroom behavior. However, post interviews with participating teachers indicated that the maze was a positive addition to the school day, especially with classroom management.

Maryann Mitts, Director of Athletics, Cottey College; Cathy D. Lirgg, Professor, College of Education and Health Professions, University of Arkansas; and Eric Lange, Professor, Physical Education Department, Tulsa Community College. Please send author correspondence to clirgg@uark.edu

Introduction

Remarkably, over the past 50 years, opportunities for children to play freely have declined continuously and dramatically in the United States and other developed nations; that decline continues, with serious negative consequences for children's physical, mental, and social development (Gray, 2011). Typically, children provided abundant vestibular stimulation—jumping, swinging, turning somersaults, walking on the garden wall, riding skateboards—mastering all movement through space. Today, many schools have removed swings and other playground equipment. So, because of fear that a child might be injured, children are affected by a lack of needed movement opportunities (Almon, 2018). The overarching question is how this shift in "play" has impacted children's sensory systems and how they perform physically, academically, and socially.

The sensory system is responsible for detecting stimuli from the external environment. Once detected, the body responds through the interpretation of such stimuli. This occurs when information about sensations is passed back and forth between the central nervous system (CNS), nerves in the brain and spinal cord, and the peripheral nervous system with the nerves outside the CNS. Research suggests that stimulation of the sensory system can positively affect a child's cognitive, emotional, and social well-being. Furthermore, by specifically challenging the senses of touch, hearing, vision, and balance, not only is there evidence of enhanced learning but also improvement in children's behavior (Kranowitz, 2004).

The vestibular system is the sensory system specifically involved in developing the middle and inner ear and is recognized mostly for its critical role in balance, equilibrium, and motor development. When the head is moved, the fluid in the ears moves and shifts, constantly providing information about the position of the head and body in space, known as spatial awareness. The vestibular system holds another important responsibility as it combines with the eyes to filter through environmental stimuli and provide responses. Movements such as jumping, swinging, rolling, crawling, and climbing are responsible for developing the vestibular system, thus aiding in the more appropriate sensory information analysis and response (Braley, 2014).

Rolling, climbing, jumping, crawling, and spinning are basic motor skills that stimulate the sensory system, encourage development in both sides of the brain, and serve as the foundation for growth and learning. Without this sensory stimulation, children will have difficulty fully developing their auditory or visual systems when they use both sides of the brain. With good integration and timing, smooth and coordinated movements occur. However, when both sides of the brain do not integrate on a regular basis, non-fluid movements occur due to poor brain processing. This non-fluid movement indicates poor brain processing that can manifest itself in learning problems, learning disabilities, poor academic performance, and many other struggles in life (Belgau & Belgau, 2000).

On the other hand, when a child has a well-developed sensory system, information from the eyes, ears, balance, and movement can be organized more efficiently and filtered in the brain quickly, allowing the brain to respond appropriately to environmental stimuli. To accomplish this, research suggests activities promoting brain integration be performed frequently until movements are fluid and coordinated and the eyes converge efficiently. Likewise, a growing body of mainstream scientific research clearly points to the critical role sensory/motor neural development through the vestibular system (balance/inner ear system) plays in learning (Meyer, 2012).

Research also suggests sensory stimulation exercises can quickly enrich visual-perceptual problems in children with vestibular dysfunction. In fact, children respond more quickly than adults because of their greater neural plasticity and thus can more quickly compensate for and adapt to vestibular deficits. With an individualized approach, exercises addressing eye-movement control, balance, and body movement functions could have an immediate and dramatic positive effect on elementary children's academic achievement and classroom behavior (Cronin, 2003).

One program based solely on physical activity is the Minds in Motion Maze (MIMM). This program proposes a link between early afferent neural stimulation and cognitive abilities (Meyer, 2012). Specifically, movement activities that stimulate the vestibular system, such as balancing, rolling, pushing, pulling, stomping, and jumping, to name a few, have an impact on children's academic, social, behavioral, and physical domains. MIMM consists of 15 different daily

activities configured into stations that provide motor development exercises for students to experience increased sensory processing and sensory integration during the study to improve children's visual and auditory processing and motor skills. Minds-in-Motion activities have been designed to develop and challenge a student's balance and learning capabilities for the use of classroom or physical education teachers, inside or outside environment, in limited space, and with affordable equipment. Internal clinical data of Meyer's program suggests that when students of any age, race, or socioeconomic level have opportunities to build strong neurological foundations by activating sensory-motor integration processes, they become positioned to learn with ease and success and may be able to reach a higher potential (Meyer, 2012).

However, there is limited evidence that the maze curriculum has been used to show its specific effect on cognitive skills and classroom behavior. Using the MIMM curriculum taken from the first six weeks of the Minds in Motion curriculum, this study aimed to investigate the MIMM and the effect of sensory stimulation within physical activity on auditory memory, reading levels, and classroom behavior. This curriculum ensured participants' consistent activity over the six-week intervention period. Three research questions were developed: 1) to what extent does the Minds-in-Motion intervention maze affect auditory memory as measured by the Auditory Digital Span, 2) to what extent does the Minds-in-Motion intervention maze affect composite reading levels of elementary students as measured by the Developmental Reading Assessment, and 3) to what extent does the Minds-in-Motion intervention maze affect the classroom behavior of elementary students as measured by number of office referrals.

Method

Participants and Design

Participants were 185 6- to 11-year-old students who attended grades 1-5 in the same Midwest elementary school. The largest segment of this student population consisted of Caucasians (88.1%), a similar ethnic distribution to other schools in the district. The gender breakdown of the participants was nearly equal, with male (51.9%) and female (48.1%) students.

This study received formal approval in compliance with all the institutional and federal regulations concerning the ethical use of human volunteers for research studies. The principal, teachers, students, and parents/guardians of all children in first through fifth-grade classes provided consent. To protect participant identity, each student had an assigned identification number to assist with data analysis. The study was voluntary, and a participant could withdraw for any reason and at any time. The researcher and a small research team assisted in collecting data at both pretest and posttest. Each classroom (intervention) teacher ensured that the students attended their respective maze sessions each morning and afternoon, monitoring protocols as they maneuvered through each activity.

During the typical school day, one class from each grade served as the intervention group (n= 91, 52 male; 39 female, mean age = 9.07), participating for 20 minutes in the Minds in Motion maze, which was broken down into two 10-min sessions, one in the morning and one in the afternoon for 6 wks. The other class in each grade was the control group (n= 94, 49 male; 45 female, mean age = 8.80), and they continued with their normal school day activities. For purposes of the study, the students in the control group did not have access to the Minds in Motion maze during the conducted time of the study; however, they were promised to be given access to the maze after the six-week study was concluded, as stated in their parental consent form.

Maze

The maze followed the Maze Handbook approach (Meyer, 2012), which consisted of 15 daily stations designed to develop and challenge a student's balance and learning capabilities. The obstacle course takes less than five minutes to complete; thus, under the 10-minute specifications of this study, each student could finish at least two rounds during each session. The Minds in Motion maze was called the Brain Ninja Maze to accommodate a more elementary setting. Using the appropriate terminology, "Ninja" students were associated with being safe, respectful, quiet, and focused on that of a Ninja cartoon character. The 15 MIMM activities, along with a description of each activity, follows:

Station 1: Eye to Eye: The instructor stands in front of a student and moves a pencil with a topper in front of the student's eyes

(approximately 14 inches away) while the student follows the object with his/her eyes. The pencil is moved in the following pattern: two horizontal, two vertical, two circles clockwise, two circles counter-clockwise, two horizontal, and two convergence training (going in toward the nose).

Station 2: Monster Mash: Students stomp down hard on padded shapes or blocks on the floor in a pattern.

Station 3: Puppy Dog Crawl: Students crawl on their hands and knees on the floor in a given direction for a specified distance.

Station 4: The Electric Slide: Students side-step along a path, keeping their toes, hips, and shoulders parallel to a wall. In a step–slide motion, they lead with one foot until halfway through the path, then turn so that another foot is leading.

Station 5: Eye Can Convergence: Students hold a beaded string (three beads affixed to a four-foot string) in their hand and focus on each differently colored bead one at a time while counting to 10 at each bead.

Station 6: Strong Arm Push: Students stand facing the wall and push against it with the palms of their hands as hard as they can for 10 seconds. The push is initiated straight from the chest and perpendicular to the wall.

Station 7: Balance Board Bash: Students stand on balance boards, training their bodies to suspend in balance.

Station 8: The Beam Team: Students walk on balance beams in a variety of ways in order to develop balance.

Station 9: Jelly Roll: Students roll on a mat placed on the floor in a predetermined manner.

Station 10: Climb Every Mountain: Students step over hurdles or obstacles of varying height.

Station 11: Bean Bag Boogie: Students throw and catch a beanbag while walking along a pre-determined path. Students are encouraged to follow the bag with their eyes at all times. Students will progress through several skill levels of throwing and catching during the six sequential weeks.

Station 12: Jumping Jack Flash: Students perform a standing "broad jump" between two designated lines taped on the floor.

Station 13: Cross Walk: Students slowly walk while touching alternating knees with opposite hands. ***Benefit***: Integrates the brain

with bilateral coordination movements while crossing the body's midline. ***Application***: Aids students in bringing their hand to the left margin of their paper for writing assignments and speeds up brain processing.

Station 14: Skip to My Lou: Students skip down a designated line while swinging their arms cross-laterally in an exaggerated fashion.

Station 15: Step Back: Students walk backward up a set of stairs, holding onto a rail for support.

Modifications to the MAZE

Progressions made to Week One of the maze activities allowed for differentiation of movement and eclectic stimulation throughout the study. Various changes included holding arms in different positions while walking along the beam or throwing the beanbag and catching it in different ways.

Procedure

Intervention Preparation

Before the study, the teachers received Maze training involving several teaching strategies. A first-grade teacher who attended a MIM Training Workshop taped a previous first-grade class as they performed all 15 Maze activities. This video gave the teachers and students visual demonstrations of proper Maze protocol. In addition, to verify that the maze setup was correct, and the children were taught the correct procedures, Minds in Motion founder Candace Meyer received the instructional video for critical review. Aside from a few minor revisions, the maze was deemed appropriate for the study.

Teacher training consisted of background information about the program, a daily morning/afternoon participation schedule for each class, and an outline of weekly changes to the maze. The teachers also received weekly email reminders full of helpful tips and reminders. The Maze, set up appropriately at the beginning of the intervention period, remained set up throughout the duration of the study. The researcher made the necessary changes for the weekly activities on Monday morning of each week. Each teacher was accompanied by an equipment list and maze diagram.

Intervention Group

Under the supervision of the classroom teacher, the students in the intervention group participated in structured physical activity time for six weeks once a day that consisted of two 10-minute bouts (once in the morning and once in the afternoon) of activity using the 15-movement activities provided in the Maze. Each child started the maze at a pre-assigned station to ensure that all children would be participating with effectiveness and time efficiency. This helped ensure maximum participation without the students waiting in line for their turn or using equipment. For timing purposes, the classroom teacher monitored the class by timing the students for 40 seconds at each station. The activities occurred in a hallway connecting the main school building with the gymnasium.

All teachers received a six-week plan based on the Maze Handbook before the intervention sessions. Every Sunday, an email with changes and additional challenges was sent to all teachers via email. They were instructed to notify the children of such changes on Monday before beginning the maze and to keep such added activities for the remainder of that particular week. Monday's sessions needed verbal instructions, demonstrations, cues, and feedback due to the changes and new challenges in the program. During the remainder of the week, cues, feedback, and additional demonstrations were not delivered unless necessary. The goal was to let the children explore, adapt, and experience the tasks according to their motor development needs.

Control Group

While the intervention group received structured movement in the maze for 20 minutes per day (two 10-minute increments), the control group participated in their regular school-day activities. These activities included academic classroom activities, unstructured recess, art, music, and other activities typical of students attending an elementary school.

Dependent Measures

Auditory Digit Span Assessment

Auditory memory involves taking in information that is presented orally, processing that information, storing it in one's mind, and

then recalling what one has heard. It involves attending, listening, processing, storing, and recalling. Because students with auditory memory weaknesses pick up only bits and pieces of verbalized during a classroom lecture, they make sense of only small amounts of what the teacher says. Afterward, they can recall only a small amount or none of what was said. Being unable to take in verbal instructions, process, and respond to a teacher's voice, whether through giving directions, laying out behavioral expectations, or instructing, would be troublesome to both academic achievement and classroom behavior. Students with auditory memory deficiencies will often have trouble understanding words and remembering terms and information presented orally (Cusimano, 2010).

For the study, students repeated a series of numbers dispensed by a computerized auditory program. The assessment began at two numbers and proceeded up to seven. Six columns of 10 words made up the assessment. Collected data included the difference in the number of lines a student repeated correctly until obtaining three errors.

The Developmental Reading Assessment (DRA)

The DRA Assessment is part of the Missouri Assessment Program (MO DOE Website). It is given four times a year to all elementary students in the school district, and it measures a student's reading proficiency through observation, recording, and evaluation of performance. The test involves observing a student's reading engagement, analyzing and recording oral reading fluency, and evaluating the student's comprehension level. The researcher chose the DRA because it is a criterion-referenced assessment supported by sound validity and reliability analyses. This study used a composite score of the student's accuracy, oral reading fluency, and comprehension levels. Each DRA assessment occurred during one-on-one reading sessions between the teacher and student. A series of texts were used, each increasing in difficulty. Each classroom teacher gave their students the reading assessment. It was presented in one sitting because only a few students can be tested daily. Thus, the test was administered in all grade levels during the week before the intervention period beginning and immediately after the intervention period concluding. The principal collected the DRA results and provided them to the researcher.

Think Sheets and Office Referral

A two-step protocol was used to assess classroom behavior. The first is Think Sheets, used at elementary schools to document inappropriate classroom behavior. Following the Behavioral Flow Chart provided by the administration to each of the teachers at the beginning of the school year, teachers decide when a behavior requires the Think Seat. The Think Seat is located in the principal's office, removing the student from the undesired situation and allowing ample time to reduce their stress level and reflect upon the occurrence. It also enables the administration and teachers to assess whether the student can return to the classroom setting.

After a brief cooling-off period, the student must complete a *Think Sheet*. This self-reflection and processing activity forces the student to think about *what* incident occurred, *why* it took place, *how* it could be handled in the future (if the same incident occurred), and whether or not the student believes he/she is ready to return to the classroom. The number of *Think Sheets* six weeks before the date of the Maze initiation was collected. This total was compared to the number of *Think Sheets* given to students, both in the control and intervention groups, during the intervention period. These office referrals are usually for grievances deemed more serious and typically result in consequences for the student, such as in-school suspension, removal from the lunchroom, removal from recess, conference with a counselor, conference with parents, etc. The number of office referrals from the beginning of the semester to the date of the Maze initiation was collected, and the number of office referrals given during the intervention period was calculated to calculate the difference score.

Treatment of the Data

The Statistical Package for Social Sciences (SPSS) version 23 was used to analyze the data for this study. MANOVA was conducted to identify differences between the intervention and control groups on the three dependent variables: memory, reading levels, and classroom behavior. The score for each dependent variable was determined by taking the difference between the post-test and the pre-test score. For all analyses, the alpha was set at .05.

Results

Before the final analysis, the sample population was analyzed to determine their viability for use during analysis. Participants who did not meet the 8 out of 11 sessions (80%) attendance had their data removed from the final analysis. Participants were also removed from the analysis due to pretest and/or posttest absences. After a review of the attendance records, 174 students (94% of the total students involved) met the attendance requirements. Means and standard deviations for all dependent variables can be found in Table 1.

Table 1
Means and standard deviations for each assessment

	Control			Intervention		
Assessments	*n*	M	SD	*n*	M	SD
Auditory Memory*	91	1.87	4.45	83	3.51	5.57
DRA Levels	91	4.95	4.634	83	4.67	7.10
Office Referrals	91	.0330	0.567	83	.229	0.786

Note: $*p < .05$

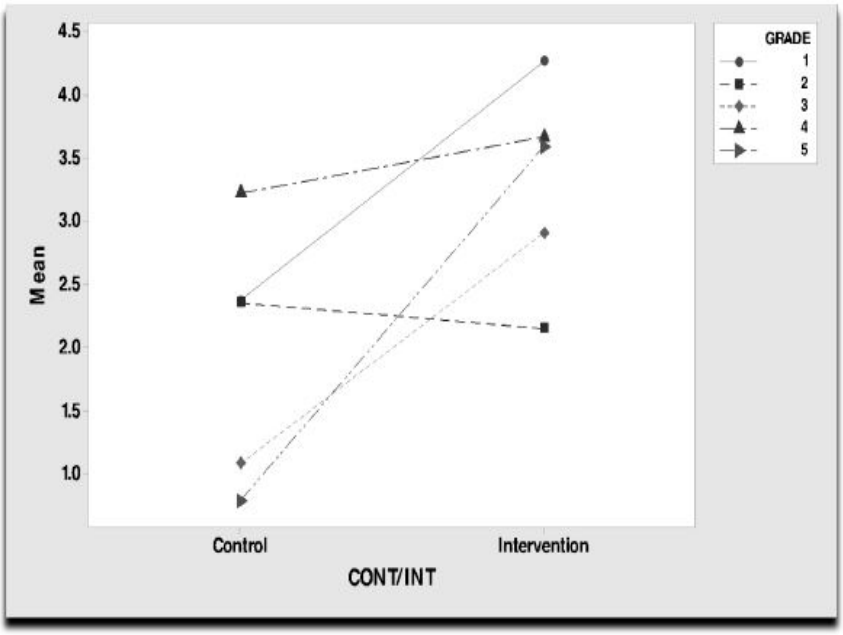
MANOVA Results

A one-way multivariate analysis of variance was conducted to determine the effect of the Maze (compared to those in the control group) on the three dependent variables: auditory digit span assessment, DRA, and behavior.

Results of the MANOVA revealed a significant multivariate F: Wilks's $\Lambda = .95$, $F = (3,170) = 2.95$, $p = .034$. The univariate tests for each dependent variable found significance in only one variable (auditory memory), $p = .029$. Specifically, the results show that the intervention resulted in an improvement of about two points higher than that of the control group. Differences in improvement for neither of the other two variables reached significance.

An interactive plot showed a positive change for four of the grade levels to show the intervention's effect on auditory assessment more

Figure 1
Grade-level Scores for Auditory Memory



clearly (see Figure 1). Grades 1, 3, 4, and 5 experienced an increase from the intervention, while Grade 2 showed a slight decrease.

Follow-up Qualitative Data

This section details the meeting notes from the follow-up teacher's meeting. The participating teachers volunteered to attend a short informative meeting one week after the conclusion of the six-week study to express impressions and observations of the Minds in Motion Maze and to discuss possible improvements for future research studies. The first and third-grade teachers associated with the intervention group stated that they saw an improvement in classroom behavior after participating in the maze. The teachers in the second, fourth, and fifth grades did not seem to notice a difference in behavior. All intervention group teachers believed in the connection between sensory stimulation and academic improvement, seeing growth in their classrooms.

All teachers believed that having a longer intervention phase would make the Maze very effective. For example, having the stu-

dents participate in the Maze over an entire semester rather than just six weeks would provide more opportunities to participate in and solidify the maze movements. Likewise, purchasing more equipment would make the Maze more challenging for students, especially those in the fourth and fifth grades. Lastly, teachers felt that some stations needed to be adjusted to fit the narrow hall space provided for the maze set up, which would make it more efficient for the students to complete more rounds in the time allotment.

Another issue was effort. Effort was an intangible element that was hard to measure as some students might not have put forth the energy required to see significant improvement. Teachers mentioned that some incentive programs, such as naming a "Ninja of the Day," would help improve behavior. When they randomly videotaped their students, students were more motivated to work hard during the stations. The final recommendation was that one person be responsible for the maze, a person who knew all the students well, could motivate them to give their best and give extra support to those students who needed it most.

Discussion

This quantitative study investigated the effect of a sensory stimulation maze on auditory memory, reading levels, and classroom behavior in first through fifth-grade students.

One assessment, the Auditory Digit Span Assessment, was employed from the Minds in Motion program. At the same time, the Developmental Reading Assessment (DRA) was used due to its convenience as the main reading assessment for the school district employed in the study. The office referrals were a consistent measurement of student behavior that the principal could track every day.

Implementing the Maze in an elementary school setting is challenging due to the age of the children and the vast number of stimuli they are subjected to in their educational environment. In essence, the real world contributes to a loss of control that could have been eliminated had the study been conducted in a lab under controlled settings. These challenges pose an interesting scenario in attempting to discover what contributes to or hinders the improvement rate of children in this setting. However, the researcher set up the Maze in the same location, and the classes were scheduled for predetermined

times during the day for consistency and limited interruptions due to weather or overlapping responsibilities.

From an extensive literature review, Madan and Singhal (2012) concluded that memory is retrieved better when learned through movement. The results found for the present study's auditory memory test would seem to support that assertion. Intervention students outperformed control students at every grade level except for second grade, which experienced very similar means. A poor auditory short-term memory is often the cause of a child's inability to learn to read using the phonics method (Ringoen, 2001). Phonics is an auditory learning system, and it is imperative to have sufficient auditory short-term memory to learn, use, and understand reading using the phonics method (Ringoen, 2001). According to Ringoen, a child must have an auditory digit span of close to six to begin to use phonics beyond memorizing a few individual sounds.

The Auditory Digit Span Assessment could help determine reading levels, especially regarding reading comprehension. Some students may have trouble processing and recalling information that they have read to themselves. When we read, we must listen and process the information we say to ourselves, even when we read silently. If we do not attend and listen to our silent input of words, we cannot process the information or recall what we have read. Therefore, even silent reading involves a form of listening (Cusimano, 2010). Given the auditory memory results of this study, one would expect that differences in reading ability would be found between the intervention and the control groups. However, this was not the case.

The results showed that the Maze's effect on reading levels was insignificant. It is possible that the insignificant results do not consider that there could have been improvement in reading levels that were not evident through the assessment used. The way in which the DRA measures improvement is not consistent among all grade levels; thus, students could have improved in reading but had not progressed to the next level. Also, it might have been beneficial to use the assessment components, reading fluency, and reading comprehension scores, as the measurement for reading improvement instead of reading levels. Another limitation is that the DRA does not provide a percentile score to be used for comparative means. In future studies, using a more sensitive assessment may show differ-

ent effects of the Maze on reading ability and a positive correlation between auditory memory and reading ability.

Furthermore, it is also possible that no differences might have resulted due to the reading activity of students in the control group. Although all students read in their regular classroom activities, at least some students in the control group could have spent more time reading while the intervention group was performing the Maze. Future studies will need to control this possibility. Lastly, the intervention was only six weeks, and it is possible that this was not long enough to notice differences between the intervention and the control groups.

The non-significant results of classroom behavior were somewhat unexpected. However, no formal evaluation was done on improved focus and completed work, which may have favored the intervention group. Also, a floor effect likely contributed to the nonsignificant results because the number of office referrals was minimal. Some behavioral improvement was, however, noted by the teachers in this study, especially for those in the higher grade levels during the teacher feedback session.

Another factor may have been the assessment instrument used. Using office referrals only amplified a small portion of behavior issues—the more extreme cases. Had the researcher used a broader approach to obtain more data, such as classroom observations, results may have been different.

Furthermore, using another standard behavior management system is recommended. By having the teachers set the same criteria for managing classroom behavior and consequences, a more accurate measurement of behavior could be collected and measured on a more objective scale. Perhaps a behavior rubric could have been used to ask each teacher to rate the severity of the behavior of the children in their class per incident.

The comments made by some of the teachers during the post-study meeting attest to the fact that some teachers saw improvement in behavior and felt as though the intervention did not have any negative effects on the students. They further expressed their desire to continue doing the maze for a longer period, especially in preparation for future school testing. As noted above, a longer study duration with the Maze should be considered in future research.

As a final note, a national recommendation for schools is to have a comprehensive approach for addressing physical education and physical activity in schools known as the *Comprehensive School Physical Activity Program* (CDC, ND*)*. It includes Physical Education and family and community engagement. The Minds in Motion curriculum enabled the elementary students in the intervention group to increase their exercise time by 20 minutes each day, which enabled them to meet a portion of their daily requirement of 60 minutes of moderate physical activity. Considering that the students were participating in the maze activities for the first time, more experience in the Maze could improve cardiovascular stamina as the maze curriculum develops more challenging skill progressions. The Minds in Motion Maze could have a place in the other aspects of the program: staff involvement, physical activity during school, and physical activity before and after school as key components to the program. However, more research must be conducted to fully determine its effect on children's cognitive development and behavior.

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METHODOLOGY

Physical Education Teacher and Students' Perceptions of Using Motion Analysis App Technology

Hyeonho Yu, Hans van der Mars, Pamela Hodges Kulinna, and Peter Hastie

Abstract

In schools, digital technology has been used to record students' motor skill performance to create records of skill execution and the tactical dimension of game performance. Informed by the Technological Pedagogical Content Knowledge framework, this study determined a physical education teacher and students' perceptions about using a motion analysis mobile application during 20 lessons of a middle school badminton unit. The critical incident technique with students and the semi-structured interviews with the teacher were conducted to gauge their perception of technology. Seven major categories and 48 sub-categories were established from the critical incident sheets. The thematic analysis was applied to understand the teacher's perception of the app. Along with the three themes that describe the perceptions of the mobile app: (a) Survival to Impact, (b) Teacher's student-centered Pedagogical Skill, and (c) Not Always 'APP'ropriate, the app provided stakeholders with innovative teaching and learning opportunities on game performance.

Hyeonho Yu, Assistant Professor, Ball State University; Hans van der Mars, Emeritus Professor, Arizona State University; Pamela Hodges Kulinna, Professor, Arizona State University; Peter Hastie, Professor, School of Kinesiology, Auburn University. Please send author correspondence to hyeonhoyu@gmail.com

Physical Education Teacher and Students' Perceptions of Using Motion Analysis App Technology

Physical Education Teacher Education (PETE) programs have evolved to integrate technology into the programs (Jones et al., 2017). A variety of ideas have been proposed in the professional literature to provide pre-/in-service teachers with opportunities to enhance their pedagogical experiences with technology: (a) mobile applications to motivate students to move, (b) video recording as an aid to formative assessments, (c) web-enabled tablets as a tool for teaching, and (d) digital movement analysis software for feedback and assessment (Baert, 2015; Leight et al., 2009; Martin et al., 2015; Phillips et al., 2014; Rosenthal & Eliason, 2015; Sinelnikov, 2012; Trout, 2013). There is also a growing body of educational literature that students benefit in various ways in their classes where digital video is integrated, such as motivation, enjoyment, and learning (Hoffenberg & Handler, 2001; Koekoek et al., 2018; Koekoek et al., 2019; Palao et al., 2015; Weir & Connor, 2009).

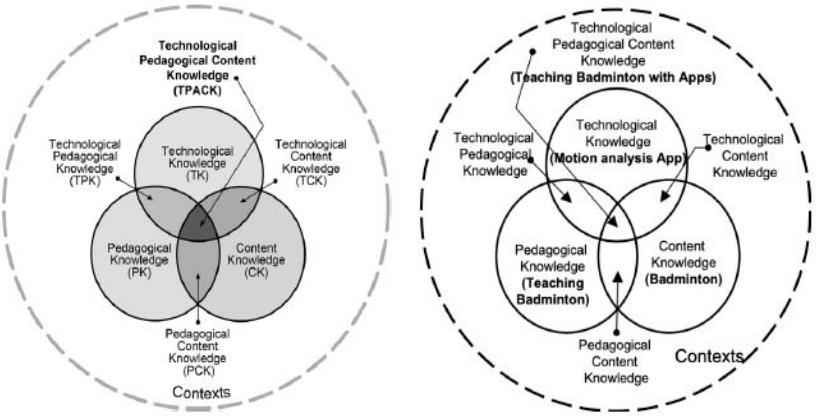
Traditional types of video technology have been used in schools to record students' motor skill performance to create permanent records of skill execution and provide visual feedback to students (Hastie, 1998; Hastie et al., 2013). The recent advance in digital devices has enabled teachers to use more compact and portable cameras that may contribute to improved quality of instruction. Today, mobile application (app) technology, as advanced video technology, enables teachers to record and edit simultaneously with their smartphones or tablets even while teaching. Baert (2015) gave examples of video technology applications (e.g., mobile devices) in teaching to accomplish the national standards, such as creating open space and returning to a midcourt position in a net/wall unit (SHAPE America, 2014). Domingo and Garganté (2016) found various impacts on learning with mobile technology from previous research: (a) providing new ways to learn, (b) increasing engagement in learning, (c) promoting autonomous learning, (d) facilitating access to information, and (e) promoting collaborative learning. However, even though the use of app technology by physical educators has resulted in students' improved learning, little is known about the perceptions of physical education teachers and their students on the use of apps. Therefore, it is crucial to evaluate teachers' and students' views of the

integration of video technology using apps for appropriate guidelines for new instructional strategies to support the use of mobile technology in schools.

Based on Shulman's (1987) framework of pedagogical content knowledge, Koehler and Mishra (2009) viewed technology as a separate domain of knowledge acquired by teachers, content knowledge, and pedagogical knowledge. As shown in Figure 1, technological pedagogical content knowledge (TPACK) encompasses all three domains (content, pedagogy, and technology). Koehler and Mishra (2009) insisted that TPACK represents pedagogical techniques using technologies in innovative ways to teach certain content. The successful infusion of technology relies on teachers' attitudes and beliefs, such as their self-confidence, self-efficacy, and willingness to change pedagogical strategies (Vannatta & Nancy, 2004; Watson, 2006). Teachers' positive views of technology were related to their opportunities for employing different types of technologies, which means that if teachers receive adequate training and support in technology, they are more likely to try it out in their teaching (Crowe & van 't Hooft, 2006; Keiper et al., 2000; Mason & Berson, 2000).

Figure 1

Application of Technological Pedagogical Content Knowledge Framework



Despite the usability and potential benefits of technology-integrated pedagogy to enhance student learning, instructional practice, and overcoming pedagogical challenges (Casey et al., 2017), there

remains a paucity of research on using mobile app technology in Physical Education (Kretschmann, 2015). Also, despite the broad support in the professional literature on the potential of digital technologies to enhance teaching and learning, there remains a dearth of evidence on the actual impact of the technologies, especially within the context of Physical Education. Therefore, this study aimed to assess both a teacher's and students' perceptions of digital technology (a motion analysis app) used in physical education classes. These stakeholders' experiences in the study are important for developing a deeper understanding of mobile video technologies' effectiveness and role in students' motor skill development and game performance in Physical Education.

Table 1
Badminton Lesson Outline for Intervention Classes Using a Mobile App

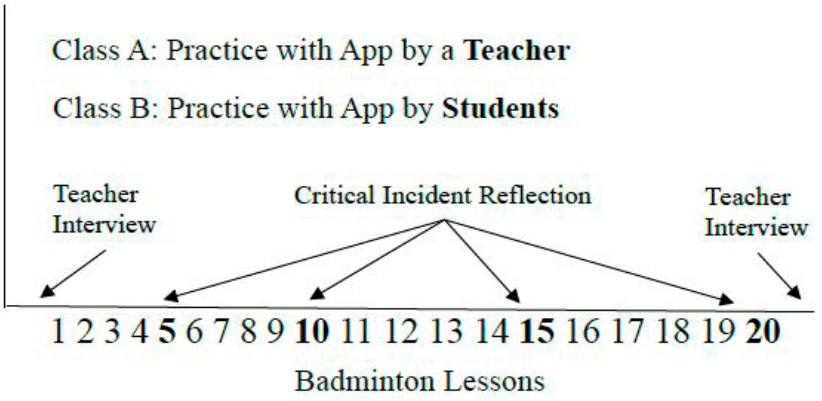
Lesson	Focus	Teacher's role	Students' role
1	Introduction to badminton (Rules & beginning skills)	Program director	Performer
2-3	Team allocation Practice competition Skill instruction using mobile App (Whole class) Video recording for gameplay assessment	Head coach Umpire advisor App user (Class A)	Performer Scorekeeper App user (Class B)
4-20	Formal competition Video recording for game play assessment	Program director App user (Class A)	Performer Scorekeeper App user (Class B)

Methods

Participants and School Setting

The participants (N=36; 27 boys, nine girls) were recruited from two randomly assigned eighth-grade classes from one charter school in the southwestern US. The physical education teacher (male, Caucasian) in the school had taught secondary school students for over seven years and implemented a variety of sports using the Sport Education curricular model (Siedentop et al., 2020). As students

Figure 2
Alternate Control Treatment Group (ACTG) Research Design



have already become familiar with this model, some features of sports education, such as a longer unit, team affiliation, and formal competition, were employed in the study. Table 1 indicates the badminton lesson outlines throughout the intervention. The school had adequate physical activity facilities, including four indoor badminton courts and equipment for this study.

Research Design

As part of a large study (Figure 2), the alternate control treatment group (ACTG) research design (Borg, 1984) with two intervention classes was used to determine if it affected the teacher and students' perceptions of the app use during the 20-day badminton lessons. A slow-motion video analysis app (*Hudl Technique)* allowed a teacher to give students immediate feedback on their skill execution. Three features of the app were implemented in the intervention: (a) adjustable slow-motion speed (1/8, 1/4, or 1/2), (b) a zoom function that helped the teacher examine specific skill movements in badminton, and (c) drawing tools with a voice recorder that allowed students to record peers' techniques, highlighting students' motion with different lines and shapes on the videos. The research team trained the physical education teacher on how to employ the motion analysis app in his teaching before the intervention. Based on the instruction complexity (Figure 3) and teaching and learning process with the app (Figure 4), the training included (a) a review of the planned con-

Figure 3
Teacher Instruction Complexity

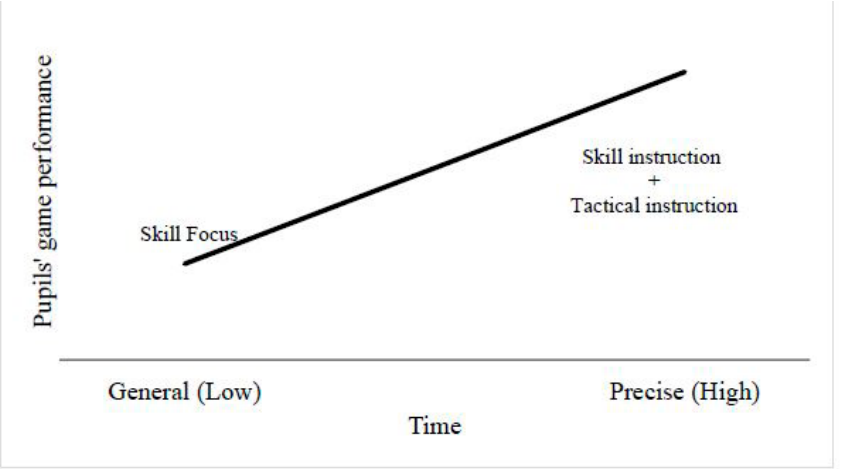
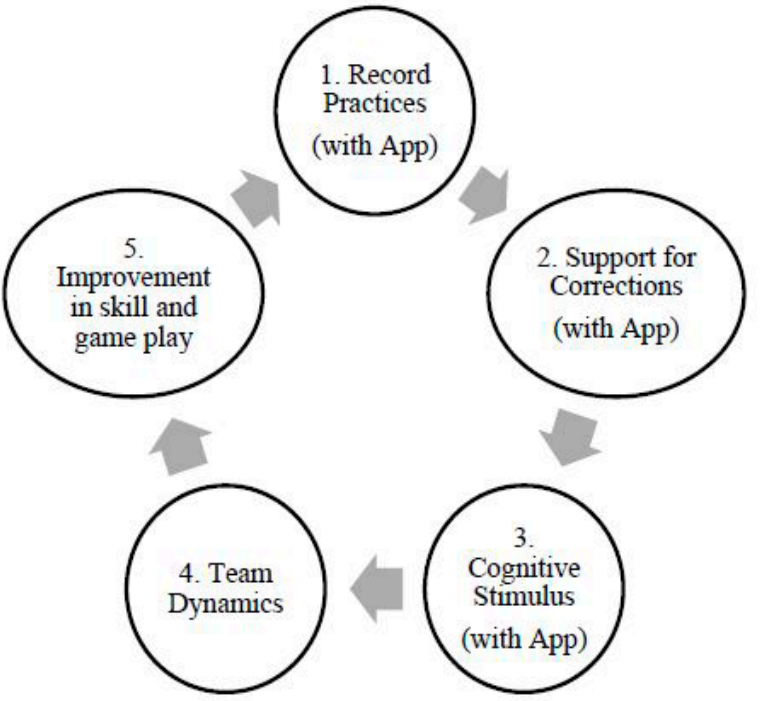


Figure 4
Teaching and Learning Process While Using the App



tent, format, and organizational procedures for the badminton lessons, (b) clear shot skill test protocol, (c) use of the *Hudl Technique*.

While only the teacher used the *Hudl Technique* in class A, students in class B were introduced to using the app starting on Lesson Day 2. The teacher explained the app features to the whole class, and each team started using the app with an iPad mini during their team practices. Students in the two classes received regular (non-)verbal skill feedback and prompts from the teacher or peers, as well as opportunities for feedback using the motion analysis app. They used the voice recording feature of the app when reviewing videos.

Data Collection

Critical Incidents

The critical incident technique (Flanagan, 1954) was used to investigate the aspects of the *Hudl Technique* that the student participants thought were significant during the badminton lessons. After five lessons throughout the badminton unit, students completed a critical incident reflection sheet with instructions similar to those used by Hastie and Curtner-Smith (2006). They were asked to write on two topics: (a) "Your experiences with the motion analysis app. What feedback did you get from your teacher or what feedback did you give your classmates using the video clips? When you have described what happened, try to explain why it was important." and (b) "One thing that happened during your lesson this week that you found important. It may have been important because it made you excited, made you bored, made you worried, or because it was something you learned that was really new. When you have described what happened, try to explain why it was important."

Pre- And Post-intervention Semi-structured Interviews With the Teacher

An interview protocol was developed based on previous research on teachers' perception of technology integration (Baek et al., 2018; Domingo & Garganté, 2016; Holland, 2001). This pre-intervention interview aimed to gauge the teacher's overall interest, perception of technology, and whether/how video technology might help him in his teaching. The perception of technology question focused on his thoughts on adopting technology in general, *Hudl Technique* train-

Table 2
Teachers' Developmental Levels in Technology

Developmental levels	Teachers' characteristics
Non-readiness	Have little interest in technology
	Have little knowledge and skills of technology
	Be resistant to using technology
Survival	Focus on their own learning of technology
	Have limited knowledge and skills of technology
	Need technological supports in their classroom
Mastery	Have knowledge and skills of technology in limited areas
	Need to expand knowledge and use of technology
	Have limited approaches to instructional use of technology
	Need personal assistance rather than formal in-service training
Impact	Integrate technology into teaching and curriculum
	Use technology as an instructional tool
	Have challenges to management for monitoring pupils
Innovation	Use a variety of technology applications in teaching
	Substantially change ways to teach with technology

ing, and his developmental level in his physical education program. As shown in Table 2, the questions were based on the developmental levels in technology use proposed by Holland (2001).

After completing the badminton unit, the teacher's experiences and perceptions about using the *Hudl Technique* were explored through the post-intervention interview. The interview questions included: (a) the experiences that were the most influential to you when using the *Hudl Technique*, (b) ways that the use of the *Hudl* app impacted students' skill and gameplay development, (c) (compared to teaching without the *Hudl Technique)* changes in the instruction when using the *Hudl Technique*, (d) the main advantages and disadvantages of the app, (e) reasons why you want to continue to

use the *Hudl Technique* or not, (f) challenging aspects of using *Hudl Technique* and why, and (g) suggestions for other teachers who are considering using the motion analysis app.

Daily Reflection Interviews

The physical education teacher also participated in a daily reflective interview after each of the 20 lessons taught to both classes A and B. The teacher briefly reflected on what went well and the challenges that arose after each class. The lead researcher captured the teacher's daily reflections with audio recordings. A research team member also took daily field notes to support evidence of the teacher's reflections and process of using video technology across both classes A and B following each of the 20 lessons.

Data Analysis

Critical Incidents

Students completed 178 critical incident sheets (one each about every five lesson days). Six major data categories were pre-determined for analysis according to the previous study's findings that informed the design of the current project (Hastie & Curtner-Smith, 2006). During the first phase, the ideas for categorization were considered to see if the data collected in this study fit into the pre-determined categories (shown in Table 3). One major category (app-related) was added to the codes for this study. The comments were coded and categorized using the analytic induction technique (Preissle & Le Compte, 1984). Two trained reviewers independently reviewed and coded all of the critical incident sheets. After coding, the two reviewers discussed and negotiated any critical incidents that were not coded the same until a consensus was reached. All codes not appearing in the critical incident sheets were deleted, and the codes with the same aspects in the data set were incorporated into several categories. The critical incident data were sorted into participants' perceptions that were consistently stated with a single idea within the seven major categories. Once the coding process was finished and negotiated by the two coders, the frequency for each code was calculated for each category to identify the students' perceptions from their critical incident comments.

Pre- And Post-intervention Interviews With the Teacher and Daily Reflection

The lead researcher transcribed Interview recordings verbatim to preserve a record of the meaning of passages. For the first phase, a deductive process was used to categorize the raw data themes detected from the interview transcriptions. Using the repeated reading method for data immersion (Braun & Clarke, 2006), the lead researcher first read the transcriptions five times. Next, the lead researcher and a second coder reviewed the transcripts independently to categorize the raw data themes. The two reviewers negotiated themes until three final overarching themes emerged. Following the identification of the three themes, the researchers assessed the transcriptions by questioning the teacher's answers to make explicit reasons guiding content and thematic data analysis. The researcher and the second coder's interpretation involved reviewing the transcripts to find meaningful and specific segments representing the teacher's experiences. The three data themes generated by the researchers provided a detailed sense of data on how and why the teacher's perceptions of the technology integration had changed.

Data Trustworthiness

Trustworthiness of critical incidents and the teacher's daily reflection/interview data were established through an audit trail kept by the research team, who independently reviewed all transcripts and member-checking with the teacher. The confirmability audit was conducted as a dependability process by asking the physical education teacher if the students' self-reported datasheets, interview recordings/transcripts, and the interpretations (i.e., themes) made by reviewers were internally coherent and represented more than just "figments of the imagination" (Guba & Lincoln, 1989, p. 243). The teacher agreed with the themes and data from the critical incident sheets and interview transcriptions. Further, data triangulation took place by comparing data generated by the interviews, informal interviews, and field notes and by comparing similarities between the student critical incidence reports and the teacher interview data.

Table 3

Frequency of Pupils' Perceptions in Critical Incidents

Class	Lesson											
	Day 5		Day 8		Day 11		Day 14		Day 17		Total	
	A	B	A	B	A	B	A	B	A	B	A	B
General comments about lesson												
Enjoyed/ Excited	4	6	0	1	0	1	1	0	4	2	9	10
Fun	0	0	2	0	0	0	0	0	0	1	2	1
Don't like/annoyed	0	0	0	0	0	1	1	0	0	1	1	2
Tiring/boring	0	1	0	0	0	0	1	0	0	0	1	1
Hard to learn	0	0	1	0	0	0	0	0	0	0	1	0
Subtotal	4	7	3	1	0	2	3	0	4	4	14	14
Team-related												
Teamwork	1	0	1	2	0	1	0	0	0	0	2	3
Affiliation	0	0	1	0	0	0	1	0	1	0	3	0
Subtotal	1	0	2	2	0	1	1	0	1	0	5	3
Affective												
Cool	0	0	2	0	0	0	1	0	1	0	4	0
Worried	1	3	0	0	0	0	0	0	0	1	1	4
Not be Cocky/Salty	1	0	0	0	0	0	0	0	0	0	1	0
Being with friends	1	0	0	0	0	0	0	0	0	0	1	0
Effort	1	0	0	0	0	0	0	0	0	0	1	0
Confident	0	0	1	0	0	0	0	0	0	0	1	0
Fair Play	0	1	0	0	0	0	0	0	0	0	0	1
Encourage pupils	0	0	1	0	0	0	0	0	0	0	1	0
Subtotal	4	4	4	0	0	0	1	0	1	1	10	5
Skill-related												
Enjoy skills	2	0	0	0	0	0	0	0	0	0	2	0
Learning/ Performing skills	18	10	5	1	3	2	4	2	1	0	31	15
No feedback from teacher	0	0	1	0	0	0	0	0	0	0	1	0
Subtotal	20	10	6	1	3	2	4	2	1	0	34	15
Game-related												
Enjoy in general	1	0	0	0	0	0	0	0	0	0	1	0
General success	0	0	0	0	0	0	2	0	0	0	2	0
Specific success	0	0	1	0	4	4	1	2	0	0	6	6
Employing tactics	1	1	4	1	6	2	6	6	3	0	20	10
Specific failure	0	0	0	0	1	0	0	1	0	0	1	1

Table 3 (cont.)
Frequency of Pupils' Perceptions in Critical Incidents

Winning	4	4	1	0	2	3	4	5	0	1	11	13
Losing	2	1	0	0	2	0	0	0	2	0	6	1
Enjoy because team sport	1	0	0	0	0	0	0	0	0	0	1	0
Rules	1	0	0	0	0	0	0	0	0	0	1	0
Teacher involvement	1	0	0	0	1	0	0	0	0	0	2	0
Subtotal	11	6	6	1	16	9	13	14	5	1	51	31
App-related												
Helpful/effective	0	0	3	5	5	7	2	7	3	7	13	26
Useful	0	0	2	0	2	0	0	0	2	2	6	2
Get more ideas	0	0	0	0	0	0	0	1	0	0	0	1
Excited/fun	0	0	0	0	0	0	0	0	3	1	3	1
Motivated	0	0	0	0	0	0	0	0	1	0	1	0
Good/Cool/Like	0	0	2	4	3	2	3	0	4	3	12	9
Bored/was ok	0	0	0	0	0	0	0	0	1	1	1	1
Don't like it/worried	0	0	0	0	0	0	1	0	0	1	1	1
Not helpful	0	0	0	0	0	0	0	0	1	1	1	1
Action and motion	0	0	1	1	0	0	0	0	0	0	1	1
Feedback	0	0	2	1	0	1	0	1	0	0	2	3
See myself/team	0	0	7	3	5	4	2	2	5	2	19	11
Fix mistakes in motion (skill)	0	0	5	2	0	1	1	0	2	3	8	6
Tactics with App	0	0	0	0	4	2	2	5	4	4	10	11
Get better/ Improve	0	0	3	6	2	3	3	2	3	6	11	17
Subtotal	0	0	25	22	21	20	14	18	29	31	89	91
Others												
Didn't learn new	0	0	0	0	1	0	1	0	0	0	2	0
Being alert	0	0	1	0	0	0	0	0	0	0	1	0
Injury/Sick	0	0	1	0	0	0	0	0	0	0	1	0
Subtotal	0	0	2	0	1	0	1	0	0	0	4	0
Total	40	27	48	27	41	34	37	34	41	37	**207**	**159**

Results

Critical Incidents

Skill- and Gameplay-related Comments

The proportion of statements between the app-related and the Other Sub-categories is shown in Figure 5. Among the 366 perceptions about the badminton lessons using the app (207 for class A; 159 for class B), 92.6% of the comments (339) were positive. Table 3 includes data for students' skill- and gameplay-related categories during the season. Students made 49 skill-related comments throughout the season (34 in class A; 15 in class B). The teacher taught students specific components of basic movement and skills such as 'good stance,' 'backhand serving,' 'form,' 'grip,' 'drop shot,' and 'keeping an eye on the birdie all the time.'

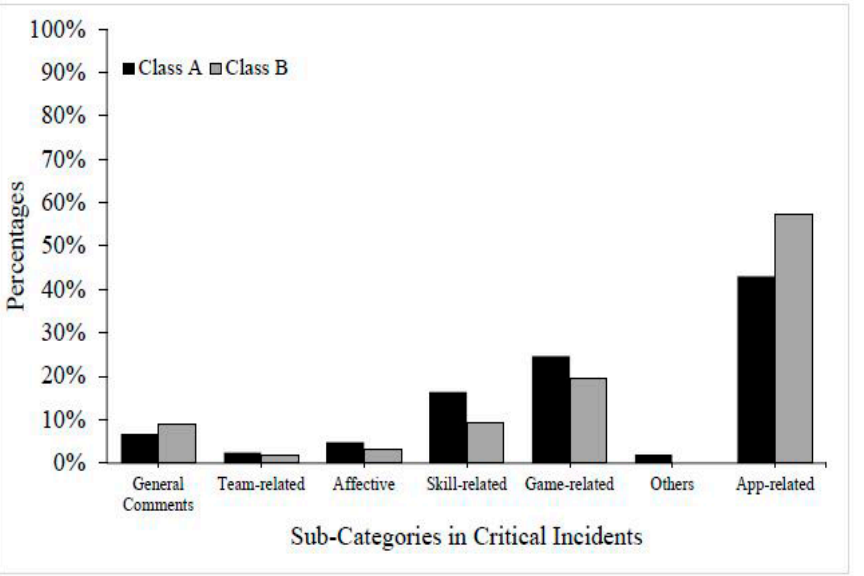
Students also produced 82 game-related comments (51 in class A; 31 in class B). They focused deeply on employing tactical moves (30 comments) to win (24 comments), such as 'made the opponent move around the court' and 'go to the center after every hit,' rather than complaining about the rotating play system or the number of courts. They also expressed their specific successes (12 comments), such as 'only missed 2 shots today', 'my form and serves went well,' and 'one that worked very often is hitting close to the net.'

App-Related Comments

A total of 180 app-related comments were made throughout the badminton season (89 in class A; 91 in class B). Nine subcategories for the general perceptions of the app and six subcategories for the performance-related comments were established. Students produced 73 positive comments regarding general perceptions that the app was 'helpful/effective (39),' 'good/cool/like (21),' 'useful (8),' and students were 'excited (4)' and 'motivated (1).' Conversely, some students felt 'bored (2),' 'did not like (2)' the app, and thought the app was 'not helpful (2):'

> I like using a great video app because it made everything more visible and cooler.

Figure 5
The Proportion of Statements Between the App-related and the Other Subcategories



> I was very excited to join the app and use all the things it had. I learned many things such as skills and strategy.

> It made me worried because it is always too bad when I am recorded.

> I didn't like using the voice…

Students also made 100 performance-related comments (51 in class A; 49 in class B). For the skill-related topic, the comments showed students' positive impressions regarding their skill development. Examples include being able to see themselves (30 comments) on the app to fix their skills (14 comments). Notably, the *Hudl Technique* app was used to employ tactical moves (21 comments) in students' gameplay, showing that their self-reported game performances improved (28 comments):

One thing that I learned today is that your posture affects the way that the birdie goes. If you turn sideways then it's easier for you to hit the birdie.

One thing that happened during this lesson is that I got to see where and how to improve my serve and how to serve a rally.

Our team did very well in the game and that was important because the app helped us with teamwork and brand-new skill throughout the badminton class.

What I learned with the app was to keep the opponent moving. A player and I have to go to the middle, every time I hit the birdie.

I learned from the app how to observe my opponent and try to hit the birdie soft on hand when I need to.

I wasn't getting under the birdie, the app also helped me learn many strategies to use against my opponent.

Interviews With the Teacher About the Use of the *Hudl Technique*

The thematic analysis process that was applied to the physical education teacher's daily reflection and two formal interviews generated three themes that describe the teacher's understanding and perceptions of the mobile app. The themes were (a) Survival to Impact, (b) Teacher's Student-centered Pedagogical Skill, and (c) Not Always Appropriate. However, even though three different categories were defined, they were all related to each other.

Survival to Impact

The teacher was interested in tools to benefit his students and their skills. His first daily reflection opened with the comment, "The kids seem to respond to it." Also, it was clear that his perception of the app would be tied to the students' use of it and benefit from its use:

> I was explaining to some of the kids how to use the app so I would show them how I did it and how I recorded the videos, and they seemed excited to use it during our next class (Day 2, daily reflection)…When you're using the app, you have to give them something specific to look for and to improve on because I can't just show them the video and not give feedback and instruction (Post-intervention interview).

As a teacher who has already noted his preference for technology that would help his students, it was clear that he liked how this app allowed students to learn more of the details of the skills, which resulted in improving their gameplay performance:

> …definitely, the gameplay was pretty good today. The games were close and everybody played well…I don't know if there are any students that aren't fairly comfortable at this point with the game, which is nice to see (Day 16, daily reflection).

Pre/Post-intervention interviews indicated that the teacher's technological developmental level moved from 'Survival' to 'Impact.' He noted that with more exposure, what he was recording and the feedback he gave through the app were better:

> I definitely need help…I think as long as I can get it down, you know, definitely help (Pre-intervention interview).

> …from the first day to the last day I definitely, you know, the quality of what I was able to produce was definitely a lot better (Post-intervention interview).

The teacher was the only one who used the *Hudl Technique* app in class A, while students in class B used the app within their team. It is evident that the teacher preferred the teaching environment in class A:

> I felt like the first-hour class (class A) showed more improvement throughout the day (Day 4, daily reflection)… It was probably easier for me to use it myself and teach the kids because there's a lot to learn…they're still learning the

rules of the game and also learning to play the game and then adding the app in there (Day 3, daily reflection).

Teacher's Student-Centered Pedagogical Skill

The teacher was optimistic about using technology in Physical Education. Before this intervention, he had integrated digital technology, such as pre-recorded music or Google Classrooms, to give students more individual instructions during and outside of class. Specific to the use of the *Hudl Technique*, the teacher's perceptions of the integration of the app into his badminton season were overall positive:

> … [this experience] points me toward the possibility of using it because before I would have never even considered it. But it's definitely something that can be valuable and useful and worthwhile (Post-intervention interview).

The teacher shared thoughts about how his normal teaching style followed a standard order of teacher demonstration of skills and students practicing the skills. During the intervention, the teacher felt very successful in his ability to teach students badminton skills and tactics. Using the app, he provided students with different ways of learning, which he promoted by asking students to plan their strategy (i.e., he was referring to strategy as a game plan for students to win), enact the plan in the rally, and reflect on the outcome of their planning by talking through the play using the app. Rather than just talking about winning or losing through skills, the teacher found out that the app added the ability to review videos and watch how a student's play caused the opponent to react:

> (I was able to) focus on things that normally we kind of skip through…it became more about strategy and we focused mainly on that. Because at that point, the students were able to get some pretty good rallies going, so they could see, you know, an entire progression of what they thought about their strategy and they were able to watch and see if they actually were able to implement this strategy (Post-intervention interview).

Not Always "APP"ropriate.

It took time for the teacher to learn the app so he could teach it. It also took time for students to learn how to use it:

> It takes a lot of time to film and put together and then once I figured it out, and was able to make some decent videos, it was definitely time-consuming and not easy to capture what I was looking for…when I would film a rally, they wouldn't have a good rally I think sometimes they were nervous… (Post-intervention interview).

The teacher expected that the students would naturally be excited about having the app available. However, sometimes, they indicated that they would rather just be playing and practicing. It challenged the students to do more thinking and reflecting, which they were not entirely comfortable with:

> When our second hour (class B) had to use it, that was tough to get them to use it the right way. They just wanted to blow through it and not really take the time to make good videos. They definitely started to pick it up, but I just felt like they would rather just be practicing and competing (Post-intervention interview).

Discussion

This study focused on the physical education teacher and students' perceptions of using the *Hudl Technique* to understand better the effectiveness and the role of app technology on students' skill development and gameplay in a badminton season. Consistent with previous research (Casey & Jones, 2011; Hastie et al., 2010; Rossing et al., 2012), the use of technology influenced students' learning and positive perceptions of badminton classes in Physical Education. The details in the findings were helpful not only in identifying the effectiveness of the app but also in determining its clinical aspects.

Within the TPACK framework (Koehler & Mishra 2009), the current study represented the teacher's pedagogical skill in using technology in an innovative way to teach badminton content knowledge (See Figure 1). Therefore, it is important to see how the use of the app affected the teacher's badminton teaching. The findings

from the interviews with the teacher represent evidence that the three components of knowledge in Figure 1 (i.e., badminton content knowledge, teaching skill in badminton season, and the ability to use the *Hudl* app) appear to be complementary to enhancing the TPACK for teachers.

The progression of what the teacher focused on through the app started from learning to play badminton. As shown in Figure 3, the teacher's instruction complexity (Koekoek et al., 2018) was initiated by focusing on each student learning proper form and execution of individual skills. Figure 4 describes the specific teaching and learning process while the teacher and students used the app. The *Hudl* app was used during the first three phases, and as shown in Figure 4, this recurring process occurred throughout the season. The teacher gained confidence in teaching with TPACK, and students had positive perceptions of improving their skill and game performance while using the app. Based upon this finding, it is suggested that this teaching and learning process using the app could be applied to other types of racquet sports, such as tennis or racquetball.

Instant feedback from the live recordings (i.e., self-/peer-/teacher's feedback) is a unique feature of the *Hudl* app to develop skills, game strategies, and tactical moves. The specific focus on using angles and skill performance was only available from the app's slow-motion playback with a drawing tool. Students' *app-related* comments in the critical incident sheets supported the positive effects of self-feedback. In addition, following the team play feature of Sport Education, students could provide peers with feedback on their gameplay performance through the app. From the teacher's point of view, the teacher focused the video playback on the movement of the opponent team by leading students to critical thinking to see what happened on the other side of the net during rallies. Bringing a very cognitive and reflective aspect of team gameplay allowed the students to analyze their tactical moves during the games and develop new strategies to play against specific opponents. The teacher gave the students specific tasks to watch the video with a particular question depending on their performance, and accordingly, students were critically commenting on specific aspects of gameplay. Students' prompting right after their performance is available only in the learning environment using live recordings. Even though app technology offers potential in the sense of instructional

strategies and positive views in this study, more research is needed to investigate mobile learning and the application of teaching strategies of mobile learning in physical education. Also, given that the most attention has been placed on higher education (Baran, 2014; Franklin & Smith, 2015), further research investigations for mobile technologies in K-12 settings are recommended (Gubacs-Collins & Juniu, 2009; Rosenthal & Eliason, 2015).

It is worth considering having a video analytics team as one of the non-player roles in sports education. Even though a total of 180 *app-related* comments in the critical incident sheets provided strong evidence that pedagogical aspects of the *Hudl Technique* influenced students' skill development and gameplay, inevitably, there were also some negative comments regarding the use of the app. Some students were not motivated every time and wanted more time for practice and gameplay. In contrast, some students were motivated to play with the app, being more likely to use it. Considering there are non-player roles in Sport Education, teachers could recruit video technicians who have more passion for using video analysis to develop more expertise in video analysis for both skills and gameplay.

In addition, further study is needed to determine the appropriate amount of time and proper timing for using the app. The teacher pointed out the periodic use of the app instead of using it in every class with every student, especially when students need to learn new skills and find their issues to focus on during gameplay. Time is critical in determining the development of technique execution and game-based decision-making (Miller, 2015). Even though a longer unit was used in the study, recording video clips and learning how to effectively use the app require time. However, there is no doubt that this would become less of an issue once students gain more experience.

Given that motor/movement skill competency has been emphasized for learning to play games and sports as the national standard number one in Physical Education over time (Department for Education, 2014; NASPE, 2004; SHAPE America, 2014), further research is warranted to determine whether students show benefit in their skill execution and gameplay as a result of their active use of app technology in different sports in K-12 Physical Education settings over and beyond the regular instructional efforts by teachers. Also, since little is known about the research on authentic assess-

ment of technique and game performance (Harvey & Jarrett, 2014), keeping track of physical education teachers' and students' process of teaching and learning through the app technology may contribute to authentic assessments as well as the development of instructional use of technology in Physical Education.

Conclusion

Within the design and the limitations of this study, the following conclusions are warranted: (a) when trained to do so, physical educators can effectively integrate the use of a motion analysis app and strengthen instructional skills during regular instruction in a secondary school badminton context, (b) students were also effectively able to integrate the use of a motion analysis app and mainly reported positive perceptions about using it, and (c) the app provided students with active learning opportunities through instant feedback on skill and aspects of gameplay performance. Further research is needed for implementing innovative and authentic teaching and learning environments with app technology.

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PEDAGOGY

An Alternative Model for Physical Education Teacher Education Majors: The Process of Programmatic Restructuring

Deborah Baxter and Bernie Goldfine

Abstract

This research paper introduces a novel program structure for a Bachelor of Science in Physical Education Teacher Education (PETE) aimed at increasing enrollment by offering two career-driven, non-gated tracks. The declining interest in education professions among college students and the resulting deactivation of university PETE programs due to low enrollment necessitate innovative solutions. Current data indicate a significant reduction in the number of students pursuing careers in education, contributing to a shortage of qualified physical education teachers. To address this issue, the proposed program structure offers a tri-track system: one focused on traditional physical education teaching and the other two tracks on athletic coaching and physical activity leadership. Both non-gated tracks are designed to attract a broader range of students by eliminating restrictive entry requirements and providing clear, career-oriented pathways in a variety of fields related to health and physical activity, including coaching in private settings (e.g., sports clubs and academies) and community settings (e.g., municipal recreation programs) and leadership in community-based

Deborah Baxter, Clinical Professor, Sport Pedagogy, University of Alabama; Bernie Goldfine, Professor, WellStar College of Health and Human Services, Kennesaw State University. Please send author correspondence to dsbaxter@ua.edu

health and physical activity programs. By diversifying career options and removing entry barriers, this innovative structure aims to rejuvenate PETE programs, making them more appealing and accessible to prospective students.

Introduction

The number of undergraduate students pursuing a bachelor's degree in education declined substantially over the last few decades, according to the National Center for Education Statistics (Schaffer, 2022). Data from 2019-2020 shows a 19% decline in the number of bachelor's degrees as compared to the period from 2000 through 2011 (Schaffer, 2022). The decline is even more significant compared to 50 years ago (circa 1970-1971) when education was the most popular field for U.S. undergraduates, representing 21% of all degrees conferred (Schaffer, 2022).

The COVID-19 pandemic exacerbated this decline in the U.S. teacher pipeline, with K-12 experiencing upheaval as it sought to find the best ways to teach: remotely, in person, or with a hybrid model blending the two modalities. A survey by the American Association of Colleges for Teacher Education found that 20% of institutions experienced at least an 11% decline in undergraduate education majors during the pandemic (2022, para. 3), and Teach for America, which recruits recent college graduates to teach in low-income U.S. schools, received fewer applications than in previous years (Goldberg, 2021).

The number of students pursuing a bachelor's degree in physical education has declined significantly, in line with other teacher education programs, which has precipitated the closure of some of these programs at institutions across the U.S. (Bulger et.al., 2015). Although many hypotheses have been proposed to explain the decline in Physical Education teacher education (PETE) majors, it is difficult to determine definitively why such programs are in decline (Ward et al., 2016). Universities are facing budget cuts and reduced investment in public education overall (Flaherty, 2020), leading some to ask, "[A]re [teacher education programs] dying of natural causes or being killed off?" (para. 1).

In response to budget cuts, the University of South Florida's (USF) College of Education eliminated the bachelor's degree program in

education and focused on the Graduate School of Education, which better aligns with the demands of students seeking alternative, non-traditional pathways (Flaherty, 2020). Local school leaders opposed this plan, stating that it would result in teacher shortages in the local communities. A USF faculty member noted, "You can't just learn the content disciplines without understanding pedagogical practices and how to structure learning in the classroom." Others contend that to address declining enrolment, programs should invest in expedited degree pathways for paraprofessionals, scholarships/stipends for student teachers, and partnerships with local school districts and community colleges (Knox, 2022).

Similarly to USF, The Ohio State University phased out its PETE program in 2022 but continued to offer the master of sport coaching degree (King, 2022), while Purdue chose to phase out its PETE program in 2018 (Templin et al., 2014). At Purdue, Templin and colleagues (2014) believed enrolment was cyclical and would correct itself over time; however, as concerns grew, they proposed a new major called the Physical Activity Professional (PAP) designed to equip students with the skills, knowledge, and dispositions to work with a variety of individuals in a breadth of settings. The proposed major included 50% common credits and three specialized tracks—(a) teacher education, (b) youth fitness development, and (c) sport coaching and instruction—and it was estimated that two years would be needed to reverse declining enrolment. Purdue's administration chose to reject the proposal. Templin and colleagues advocate for thinking outside the box to provide curricular and professional options rather than simply eliminating PETE programs. Interviews conducted with PETE program coordinators throughout the U.S. revealed that 55.2% were not concerned about losing their programs, 38.7% expressed concern that their programs might close, and 6.1% were concerned their programs would close in the next two years (Ward et al., 2023, p. 5). Thus, nearly 50% of PETE programs in the U.S. may be at risk.

In 2021, the Health and Physical Education (HPE) program at Kennesaw State University (KSU) was identified as a low-award program (i.e., graduated a low number of students annually, on average) and was in danger of being phased out if the program was not modified to include professional career options in physical activity

and sport. The rationale for revitalizing the program was to increase enrolment while simultaneously meeting the department's goals for student success, one of which is to recruit, retain, and graduate undergraduate students while increasing the quality and breadth of academic and co-curricular programs. The programmatic changes were also intended to support and engage with the local community. The purpose of this manuscript, therefore, is to share the process used by the PETE program coordinators and faculty at Kennesaw State University to restructure the gated, teacher preparation-only degree program to create two additional non-restricted degree tracks to explicitly expose majors to career-aligned options within the field of health and physical activity.

Method

The method used for program revitalization was grounded in the integration of Hanover's Research (Gibson, 2022), Atkins' (2023) qualities of a winning academic program, Bulgar et al.'s (2015) emphasis on unique programmatic features, such as non-certification tracks, and Full Fabric's (2024) strategy of designing a modular and integrated curriculum with established strategic partnerships. The process of restructuring occurred in three action phases. During the first phase, a *strong argument was proposed* for developing two new coaching and youth activity leadership concentrations. Throughout the second phase, a *dynamic new curriculum was prepared* consisting of a shared core and significant field hours to better align with students' diverse career aspirations. The last phase completed the cycle wherein *faculty and staff promoted the new major* on campus and throughout the community. Full Fabric (2024) highlights that launching a new academic program requires close collaboration with stakeholders from different departments, the office of academic admissions, and a marketing team. They identified eight key components to guide the process: (a) get the positioning right, (b) build a marketing plan, (c) define your admissions criteria, (d) create an admissions map, (e) craft content for the admissions journey, (f) host promotional events, (g) streamline the admissions journey, and (h) nurture a community.

Robert Atkins (2023) CEO and founder of Gray Decision Intelligence, advises that for each unique academic program to be successful, it must be (a) mission-centred, (b) market-smart, and (c)

margin-conscious. He further states that stakeholders should not look at instructional costs in isolation, assuming a program with few students will yield a small margin. Cutting small programs without understanding economics may make the financial challenges worse. Similar to Full Fabric's recommendations, Atkins notes the importance of including academics and administrators in the decision-making process to ensure it is intensive, transparent, collaborative, and data-informed.

Results

Phase 1: Propose a Strong Argument

KSU, the third-largest university in the University System of Georgia with an enrollment of more than 43,000 students, is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). One of 11 colleges comprising KSU, the Wellstar College of Health and Human Services (WCHHS), is experiencing enrollment growth, with 11% of the KSU student population participating in a WCHHS program.

The Department of Health and Physical Education (HPE) is a dynamic department of multidisciplinary full-time faculty, part-time faculty, one staff member, and approximately 900 students enrolled in three undergraduate programs (i.e., Integrated Health Science, Public Health, and Health and Physical Activity Leadership) in addition to a graduate certificate program in mHealth (mobile health), a minor in Public Health, and a certificate in Coaching Education.

At the time of restructuring, national trends in teacher preparation showed a decline across all disciplines, and enrollment was not expected to grow significantly in the next five years with the current Teacher Preparation-only model. Two additional factors that constrained program growth were (a) the prescriptive nature of the program, which allowed no room for electives, and (b) the cohort model that limited potential candidates to admission only during the fall semester each year.

The Teacher Preparation Concentration has a formal admission process. The Georgia Professional Standards Commission (GaPSC) requires that teacher-preparation candidates complete 36 semester hours of accredited college coursework (KSU and transfer credit, if applicable), maintain a KSU institutional (adjusted) GPA

of 2.5 or higher, and receive a grade of "C" or higher in lower division major and teaching field courses required for upper division education courses. In addition, for admission to the Health and Physical Education (P-12) Program, students must submit a narrative expressing their desire to enter the HPE field and demonstrate professional behavior and participation in professional activities. Students must also receive a grade of "C" or better in the following courses: Introduction to Health and Physical Activity Leadership; Fundamentals for Teaching Health and Physical Education; and Anatomy and Physiology for Health and Physical Activity Leadership.

Although 25-30 students register annually for the Fundamentals of Teaching Health and Physical Education course, only one-third persist to graduation. One reason for this is the cohort model of admission, which limits student applications to the Fall semester only; many students leave the program upon learning that the matriculation process would take them an extra year.

Several factors were taken into consideration during the program revision. One of those factors is the popularity of sports in our society and its impact on employment opportunities. The popularity of sports has spawned an increasing need for competent and ethical coaches. According to the U.S. Department of Labor, the job market for coaching is projected to grow 26% through 2030, faster than the average for all occupations. Annually, there are approximately 45,000 openings for coaches and scouts, and in Georgia, the annual demand for professionally prepared coaches with a bachelor's degree exceeds the number of degrees awarded each year. The Coaching Certificate helps address this gap by preparing students for careers in coaching using existing coursework offered by KSU.

Although public schools are currently the largest employers of sport coaches, an emerging growth area has been the privatization of sport over the last 20 years. Young athletes can now access the sport(s) of their choice through private enterprise and programming outside the traditional high school sports programs. Organized youth sports are popular among youth and their families, with approximately 45 million children and adolescent participants in the U.S. Seventy-five percent of American families with school-aged children have at least one child participating in organized sports. To foster a positive

youth sport experience for these young athletes, formal preparation in coaching education is needed.

The Certificate in Coaching Education is designed for teacher candidates and students in other majors interested in youth sports. The HPE Department has offered a Coaching Minor, which typically enrolls more than 150 students per year. Due to U.S. Department of Education regulations limiting federal financial aid funds to courses in a student's program of study, students pursuing degrees with few or no free electives or upper division electives can no longer pursue this minor unless they pay for the courses themselves. However, the newly created coaching certificate, as a distinct and independently recognized program of study, allows students all students to use their federal financial aid toward courses within the certificate.

The phenomenal growth in youth sports over the last two decades, both internationally and within the U.S., has resulted in a $24 billion youth sports market worldwide—a market that is poised for even greater expansion, with projected growth expected to reach $77.6 billion worldwide by 2026 (Research and Markets, 2019). The U.S. youth sports market is currently valued at an estimated $19.2 billion, a not insignificant sum, given that the U.S. National Football League is estimated to be a $15 billion sports enterprise (Research and Markets, 2019).

Within the U.S., the sports market has been described as nascent with no end to growth in sight, given that youth sports teams are becoming more organized and increasing management efficiency is leading to more opportunities for young people to participate (Research and Markets, 2019). Two statistics that are good indicators of the demand for youth sports in the U.S. are (1) nearly 60% of the country's youth play organized youth sports, and (2) families spend a combined $30 billion annually for their kids to participate in (Stubbs, 2022). The cost is often steep, with families at the high end spending more than 10% of their income on sports camps, private lessons, travel, registration fees, club fees, and the like (Gregory, 2017).

This surge in demand for youth sports opportunities is primarily being met by private organizations rather than through the traditional means of schools, which can only accommodate a relatively small number of athletes. The private organizations that offer club

teams and travel sports opportunities range from small organizations to professional, well-organized large academies. Since these private organizations and youth sports teams need facilities for team practices and games, more than $9 billion has been spent in the last six years to build state-of-the-art sports facilities across the U.S., further testament to the demand for youth sports opportunities now and in the foreseeable future (Stubbs, 2022). This demand has, in turn, fuelled a need for qualified coaches.

Youth sports organizations cater to the desires of parents and participants for the young athletes to improve their skills and advance to the next level; therefore, coaches who can help players develop their capabilities and achieve results are in high demand. Coaches are needed not only for club and travel teams but also to meet the demand for private lessons, which can accelerate a child's development in their sport through individualized training to increase speed, foster agility, and improve strength and sport-specific skills. The tremendous demand for coaches is evidenced by the U.S. Bureau of Labor Statistics data, which projects a 9% growth rate from 2022-2032—much faster than the average growth rate predicted for all other occupations (2022).

Another area of demand for qualified coaches is in high school sports, especially in lower-profile sports (i.e., sports other than football and basketball). Many states require coaches to be credentialed teachers, but others are less restrictive, allowing "walk on/off-campus/community coaches" who do not teach at a school to serve as head coaches. In states that require head coaches to be teachers, community coaches are permitted to coach but may not assume the title of "head coach"—although they may perform as the head coach because of their superior knowledge of the sport. Of course, community coaches may choose to obtain teaching credentials if they wish to pursue a career as both a teacher and a coach. Finally, coaches interested in owning and managing their own business can create their own sports coaching business.

There are several employment opportunities in youth sport and physical activity that college graduates can pursue at agencies such as YMCAs, Jewish Community Centres, Municipal Parks and Recreation Departments, Boy & Girls Clubs, Special Olympics, and the Military through Morale, Welfare, and Recreation—a network

of support and leisure services designed for U.S. servicemembers and their families—to name a few. Organizations such as these help meet the needs of families seeking supervised activities for their children. With divorce, remarriage, and cohabitation on the rise, the traditional family consisting of a married couple with children (the dominant family structure—73% of all family units—in the 1960s) is on the decline, with only 37% of today's U.S. households maintaining this structure (Aragao, 2023). Additionally, the U.S. Bureau of Labor Statistics (2020) reports that in two-thirds of U.S families with children, both parents work (Sullivan, 2020), and it is well-documented that the U.S. has the highest rate worldwide of children living in single-parent households (Kramer, 2019).

Given the above, there is a need for supervised activities for children, particularly after school, during the summer, and at other times when the demands of work or other obligations prevent parents from being present to supervise their children themselves. Youth sports and physical activity programs are healthy activities that many parents find attractive options for ensuring their children are not only well-cared for in their absence. However, they are also engaging in constructive and meaningful experiences. Consequently, agencies seek qualified coaches to ensure their programs are well-run and provide high-quality experiences.

In summary, college graduates seeking employment in youth sports and physical activity have ample opportunities to engage in fulfilling careers at schools, with club teams, and in agencies that offer sports and physical activity programming for children and adolescents.

When these demographic data are considered in toto, it becomes clear that parents need healthy, supervised activities in which their children can participate when they are not available to supervise them. These opportunities manifest in after-school, summer, and weekend programming—often in the form of organized sports and other physical activities. In summary, college graduates seeking employment in leadership involving youth physical activity have ample opportunities for engaging and fulfilling careers, given the demographic trends within the U.S.

Phase 2: Prepare a Dynamic New Curriculum

Based on HPE majors and interests at KSU each Fall, the six-year historical enrolment trend indicated a three-year average of 77; the award trend over three years averaged only 10 graduates. Based on this data, the HPE program was identified as a low-award program, and an action plan was developed to increase enrolment and graduation numbers, partly through the revision of the HPE program to create the Health and Physical Activity Leadership (HPAL) program. The target goals are to increase program enrolment from 77 to 100 students by Fall 2024 and to graduate 15 majors in the academic year 2024. The Spring 2024 enrolment in the Teacher Preparation Foundation course (30 students) exhibited an upward trend. Additionally, it was anticipated that students transferring from other majors into the Coaching and Youth Activity Leadership concentrations would have sufficient credit hours to complete the HPAL degree program in one year, increasing degree awards in just one year. Finally, with a strong marketing campaign, enrolment in the HPAL program was anticipated to increase during the first year (i.e., the 2023-2024 academic year), with significant growth in enrolment and awards in year two once the HPAL major was fully implemented and broadly marketed.

Predictions of awards and enrolment during year one of the HPAL program were primarily anecdotal. An informal survey of students in the Coaching minor and Certificate programs indicated that many would be interested in pursuing coaching as a major. Given the flexibility of the elective coursework in the Coaching concentration, it was hypothesized that several of these students, and others in the Integrated Health Science program in WCHHS, could be ready for graduation in Spring 2024. It was also anticipated that the same would happen with the Youth Activity Leadership concentration for the same reasons. Students currently in the HPE Teacher Preparation Concentration, and other students across campus, have expressed informal interest in pursuing a career working with youth in movement settings, based on sign-in and interest sheets collected from classroom visits, athletic team visits, and student interest surveys, which were sent to students enrolled in programs housed in WCHHS as well as KSU student-athletes.

In creating the HPAL program, programmatic changes were made that aligned with KSU's strategic planning R2 Roadmap in the following areas: (a) removal of the cohort model from the teacher preparation concentration to give students more flexibility and accessibility to courses, (b) coordination of HPAL faculty with BCOE to implement additional Double-Owl Pathways—accelerated progress toward a master's degree by taking up to 9 hours of graduate coursework as an undergraduate student, (c) enhanced graduate opportunities, and (d) additional opportunities for community engagement through field experiences and internships.

The HPAL program offers engagement with the community through experiential learning opportunities tailored for each concentration. The Teacher Preparation concentration includes connections to the local community, primarily with placements in local schools where students work with young children in a real-world setting. The Coaching concentration places students in schools, including field placements in community recreational settings that offer coaching opportunities. The Youth Activity Leadership concentration further expands community relations, with planned placements in community recreation departments, activity clubs, faith-based organizations, and after-school programs.

Enrolment figures in the Coaching minor suggest there was strong interest in Coaching as a career field, and many Teacher Preparation students also expressed an interest in coaching at the high school level. Given the national trend for growth in physical activity careers, it is anticipated that the Youth Activity Leadership concentration will attract a new population of students to the department.

The new major, presented herein, deviates from the traditional PETE model by its various concentrations aimed at career paths beyond the educational setting. This new degree, the Bachelor of Science (BS) in Health and Physical Activity Leadership (HPAL), is designed to prepare students for employment in a variety of fields related to health and physical activity, including health and physical education in both public and private schools; coaching in schools, private settings (e.g., sports clubs and academies), and community settings (e.g., municipal recreation programs); and leadership in community-based health and physical activity programs.

Three significant changes made to the PETE degree to create the Teacher Preparation concentration are expected to yield an increase in retention, progression, and graduation rates compared to the former program. First, the GPA required for admission to all teacher preparation programs across campus has been reduced from 2.75 to 2.5, and the college entrance exam (SAT/ACT) is no longer required. Second, the cohort admission model has been removed so students may apply for and begin the sequence of professional courses during either the Fall or Spring semester. Third, the total number of credit hours for graduation has been reduced from 125 to 120.

The Teacher Preparation concentration remains prescriptive with no elective hours, but the Coaching and Youth Activity Leadership concentrations include six hours of elective coursework. The major program requirements include two new courses that better align with the program outcomes of all three concentrations: (1) Technology in Health and Physical Activity Leadership and (2) Teaching Games and Sports. New requirements, mandated by the Board of Regents for all public institutions in the State of Georgia, dictate that all degree programs be limited to a maximum of 120 credit hours. The former HPE PETE program required 65 credit hours beyond General Education and lower division major field hours, totaling 125 credit hours. The new HPAL program has 42 hours of common major requirements and 36 hours of specific coursework for each concentration (Table 1); these requirements, added to the required 42 hours of General Education courses, result in 120 credit hours for the degree program.

To address program weaknesses identified during a SACSCOC review, two new courses were added to the HPAL degree, and the recommended sequence of courses during the final two years of study was revised. Results from Georgia Assessment for the Certification of Educators content exams, taken before graduation, revealed that students have difficulty understanding and applying health content. Additionally, Physical Education and Health practicums at the middle and high school levels have historically been taught and implemented during the same semester, causing students difficulty distinguishing between the content and teaching methods for the two areas. The revised HPAL Teacher Preparation Concentration separates middle and secondary school methods and practicum courses

Table 1
B.S. Health and Physical Activity Leadership (HPAL) Curriculum

<table>
<tr><th colspan="3">B.S. Health and Physical Activity Leadership</th></tr>
<tr><td colspan="2">Lower Division Major Requirements
(18 credits)
• Exploring Socio-Cultural Perspectives on Diversity in Education Contexts
• Anatomy and Physiology for Health and Physical Activity Leadership OR Anatomy and Physiology I
• Foundations of Health and Wellness
• Introduction to Health and Physical Activity Leadership
• 6 Credits of Lower Division Electives. (*required for students in the teacher preparation concentration)
  • *Investigating Critical and Contemporary Issues in Education
  • *Exploring Teaching and Learning</td><td>Upper Division Major Requirements
(24 credits)
• Technology in Health and Physical Activity Leadership
• Teaching Games and Sports
• Behaviors and Psychological Aspects of Physical Activity and Coaching
• Motor Learning and Development
• Measurement and Evaluation for Health and Physical Activity Leadership
• Contemporary Health Issues
• Child and Adolescent Health Issues
• Applied Anatomy and Physiology for Health and Physical Activity Leadership OR Anatomy and Physiology II</td></tr>
<tr><th colspan="3">Concentrations (36 credits)</th></tr>
<tr><th>Health and Physical Education Teacher Certification</th><th>Coaching</th><th>Youth Activity Leadership</th></tr>
<tr><td rowspan="2">*Adventure Education and Facilitation
*Skills-Based Approach to Health Education
*Fundamentals for Teaching Health and Physical Education
*Family Health and Sexuality
*Curriculum, Instruction and Management for Early Childhood Physical Education
*Curriculum, Instruction and Management for Middle Grade and Secondary Physical Education
*Curriculum, Methods and Secondary School Health Education
*Practicum in Middle and Secondary School Health Education
*Practicum in Middle and Secondary School Physical Education</td><td colspan="2">*Coaching Principles
*Sport First Aid and Injury Prevention</td></tr>
<tr><td>*Advanced Coaching Methods for Strength and Conditioning
*Coaching Practicum 1
*Coaching Practicum 2
*Capstone in Coaching
*3 one-credit physical activity courses</td><td>*Youth Fitness Development and Assessment
*Family Health and Sexuality
*Practicum in Youth Activity Leadership
*Capstone in Youth Activity Leadership
*15 credits of 3000-4000 level coursework</td></tr>
</table>

into different semesters; this separation necessitated the move from a two-semester student teaching experience to a single semester with no change in total credit hours. Adding a new skills-based Health course offers new and revised health content; more importantly, it

presents the content separately—that is, the health content is not presented as part of the Physical Education content. Furthermore, the Practicum in Middle and High School Health Education course allows students to apply health content for an extended length of time in local schools.

One additional course was removed from the prior Teacher Preparation program: Improving Learning with Technology in High School Classrooms. This course was included in the curriculum to meet the requirements of the GaPSC concerning technology use and implementations for teacher certification. This course was replaced with a new course, Technology for Health and Physical Activity Leadership, which will continue to meet teacher certification requirements while adding content relevant to coaching and related physical activity leadership careers.

The Coaching Concentration was designed in response to the need for knowledgeable and skilled coaches who can positively impact young lives by demonstrating the value of teamwork, the benefits of hard work, and how a good strategy can lead to results on and off the field of play. The program prepares prospective coaches to work with athletes at various age and ability levels, from physical preparation to understanding the emotional, social, and cognitive needs of athletes. Graduates will have the requisite knowledge, skills, professional attitude, and expertise to succeed in an entry-level coaching professional position in schools, sports clubs, community programs, colleges, or other athletic organizations. The Coaching concentration curriculum is based on the National Standards for Sports Coaching issued by SHAPE America. It involves aspects of physical education pedagogy, health promotion/injury prevention, and kinaesthetic principles of preparing athletes for performance. The curriculum includes advanced sport-specific coaching methodology courses, two required coaching practicums in sports settings, and a capstone experience.

The Youth Activity Leadership concentration was designed to assist students in gaining the competencies, knowledge, and skills to help young people develop into competent, well-adjusted, and contributing citizens. Completing this coursework prepares students to address issues facing youth in the context of family and community, emphasizing positive outcomes through a dynamic learning envi-

ronment. This concentration prepares students for leadership positions in youth development organizations, agencies, and institutions such as schools, 4-H Clubs, Boys and Girls Clubs, nonprofit organizations, recreation/community agencies, military settings, and many others.

Graduates may be supervisors of youth development staff in educational and social service work environments, faith-based advocates for youth well-being, program evaluators, fundraisers, grant writers, administrators, and supervisors. The program partners with youth-related agencies/organizations and engages them in providing experiential learning opportunities for students. While data is not exact due to the variations in career opportunities, it is estimated that between 2018 and 2028, the careers focusing on youth development will grow 18% across the United States.

Phase 3: Promote the New Degree Program

A comprehensive marketing plan developed for the HPAL program included target demographics (e.g., KSU students in other fields and those enrolled in basic physical activity courses, high school, and two-year college students) and process measures (e.g., spotlight stops on student tours, student fairs, high-school career days, athletic advising). Brochures and posters were created in coordination with UITS, and HPE faculty discussed the new major in their courses.

A comprehensive and coordinated advising plan is imperative to growing enrolment and retaining students in the HPAL major. The current HPE Teacher Preparation major has a single advisor based in BCOE who continues to work with students in the Teacher Preparation concentration of the new major. However, the two additional concentrations require at least one advisor within WCHHS. Further, it is anticipated that KSU athletes will be attracted to the HPAL major, so coordination with advisors in the athletic department was also paramount. The new HPAL major is attractive to athletes because it will not only allow them to participate fully in athletics by pursuing a Coaching or Youth Activity Leadership Degree and by subsequently pursuing a Master of Arts in Teaching Degree (pedagogy only) after their eligibility has expired, but also will allow them to have more flexibility in coursework, modalities, and times as well as an increased number of electives.

In January 2023, steps were taken to market the program at KSU and within the broader community. Meetings were scheduled with the Director of Marketing and Communications for WCHHS to design marketing material (e.g., pamphlets, flyers, social media announcements), Owl TV messaging (i.e., digital signage on campus), bulletin board displays, etc. Updates reflecting the new major and concentrations were made to the department and university websites. Articles highlighting the HPAL curriculum and field experiences, benefits of the program, and potential career opportunities were published on the KSU homepage and in KSU's student newspaper. HPAL accounts for Facebook and Instagram were also created to broaden the marketing campaign's reach.

Because registration for summer and fall classes opened in early March of 2024, HPAL information sessions were held in February and March. The department hosted virtual and in-person check-ins to inform KSU students of the new concentrations and advise them on transferrable credits. Information tables were reserved weekly at locations around campus, including the student dining hall, the Student Centre, and two academic buildings that experienced significant student traffic. HPAL faculty participated in two KSU Open Houses in the spring and held an HPAL Interest Night for current KSU students in April. Informational visits to classes and athletic team meetings were also held throughout the spring.

To inform potential KSU students about this new degree, HPAL was highlighted as a Spotlight Stop during campus tours for prospective students in April. Visitors to KSU received detailed information on the program and had the opportunity to observe students peer-teaching in an HPE class. HPAL was also represented and featured at the Cobb Future Fest, an event hosted by Cobb County School District.

Conclusion

Beyond the development and implementation of HPAL, the premise was to provide options for students interested in a career path involving leadership in health and physical activity beyond the traditional path of teaching Physical Education in a compulsory school setting. Given that the PETE program numbers were not robust, the HPAL major was developed as a potentially attractive alternative degree for undergraduate students.

Within three months of launching, the HPAL degree attracted significant interest. In the brief time (nine months) since the major was transformed from a traditional PETE degree to the HPAL major, 119 students have chosen to pursue an HPAL degree, an increase of 81%. Sixty-three students declared the HPAL Teacher Education concentration, 26 declared the Coaching concentration, and two declared the Youth Activity Leadership concentration. Twenty-eight HPAL majors have yet to declare a specific concentration.

It is and will be important to monitor and adapt the program by regularly evaluating the success of the concentrations through student enrolment numbers, graduation rates, and job placements. Data will be used to adapt the program as needed to ensure it remains relevant and appealing to future students. A continuous feedback loop is in place to gather student and faculty feedback to make real-time adjustments to course offerings, teaching methods, and recruitment efforts. HPAL coordinators are working to polish the program further by offering an additional concentration in Health and Wellness Coaching. Students pursuing a Health and Physical Education degree can seamlessly transition into a Health and Wellness Coaching career due to the substantial overlap in coursework and skills required for both fields. Core courses such as exercise physiology, nutrition, behavioral psychology, and health promotion are integral to both programs, providing a solid foundation in understanding the human body, health behaviors, and strategies for promoting well-being. These courses equip students to design and implement personalized health plans, a crucial aspect of health coaching. Additionally, practical experiences gained through internships and fieldwork in physical education programs often involve working directly with individuals or groups to enhance their physical health, mirroring the client-centered approach in health coaching. By leveraging their comprehensive education and hands-on experience, students can effectively transition to health coaching roles, where they can apply their expertise in motivating and guiding clients toward healthier lifestyles.

The new HPAL degree is poised for success. In developing the program, care was taken to monitor degree and labor trends to ensure the program prepared students for the career opportunities available upon graduation based on projected job trends (Gibson, 2022). One

recent trend is the rise in non-clinical health professions that do not involve direct patient care. The HPAL program capitalizes on student interest in the health career field by offering alternative career pathways. For example, aspiring nursing students not admitted into competitive nursing programs can redirect their passion and skills towards the equally vital health and wellness coach role. This approach maximizes educational resources and ensures students can pursue fulfilling health promotion and disease prevention careers.

Restructuring the PETE program to include two distinct, non-gated career tracks has significant potential to reverse the enrollment decline and revitalize interest in the field. Our research indicates that offering a traditional physical education teaching track and an athletic coaching and youth activity leadership track attracts a wider range of students by providing diverse career opportunities and eliminating restrictive entry barriers. The traditional track prepares students for K-12 teaching roles, maintaining the foundational mission of PETE programs, while the added tracks open pathways to careers in personal training, corporate wellness, and community health.

This multi-track approach enhances the program's appeal and aligns with the broader trends in the health and wellness industry, an industry experiencing robust growth. Initial feedback and enrolment data post-implementation reveal increased student interest and satisfaction, suggesting that programmatic flexibility is crucial for adapting to the evolving educational landscape. By addressing the root causes of declining enrolment—limited career options and restrictive entry requirements—this innovative program serves as a model for other disciplines facing similar challenges. Future research should focus on longitudinal outcomes of graduates from both tracks to further validate the efficacy of this approach.

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YOU AND THE LAW

New Coach Obligations for Student-Athletes and Personal Safety

Penny Quinn and Tonya L. Sawyer

Abstract

A new athletic coach must ensure they are knowledgeable of many things beyond teaching student-athletes how to play a specific sport. This is necessary to protect themselves and the student-athletes under their supervision. This article overviews four common areas with which new coaches must ensure familiarity: provision of a safe environment, proper supervision, quality general safety, and appropriate documentation.

Introduction

As an individual new to coaching or an agency, a coach may find themselves in a situation that puts them at risk simply due to a lack of quality communication by their new employer, which can be further complicated by a hesitancy to ask questions as a new employee. This communication breakdown can be further complicated by agency leadership, which assumes that the new coach possesses knowledge that has not yet been acquired or that previous coaching expectations differ from those of the current agency. To protect themselves, it becomes a coach's responsibility to ensure they reach out to their

Penny Quinn, Saint Mary-of-the-Woods College; Tonya L. Sawyer, Saint Mary-of-the-Woods College Please send author correspondence to Penny.Quinn@smwc.edu

athletic director (AD) to ensure they have been fully informed during pre-season meetings and training. This is especially important when "training" has been minimal.

This is not to infer that a coach is responsible for risks that are inherent to the game, such as a twisted ankle occurring during a volleyball game when landing on another player's foot or a concussion that occurs during a football scrimmage. Potential coach liability occurs when the coach's action or inaction increases the injury risks associated with a particular sport. When alleging coach liability, a student-athlete must prove wrongful action (or inaction) by the coach causing the injury to recover damages. Injured student-athletes typically seek damages due to negligence on behalf of the coach, and negligence is typically defined as a failure to use reasonable care, resulting in damage or injury to another. As a result, coaches and other athletic staff must ensure necessary steps are taken to mitigate or prevent injury from occurring. This is especially true of situations resulting in permanent (death) or otherwise serious injury to the student-athlete. In addition to the legally reasonable standard of care, a coach has an ethical obligation to provide a safe environment and ensure proper steps are taken to protect their athletes (Mitten, 2012).

New coaches must ensure familiarity in four common areas: 1) provision of a safe environment, 2) proper supervision, 3) quality general safety, and 4) appropriate documentation. This risk mitigation information is not meant to replace legal counsel and specific variations and expectations may exist within school districts and/or programs.

Safe Environment

Before the first practice even begins, a coach is responsible for ensuring student-athletes are provided a safe place to practice and compete. Responsibility includes ensuring both the facility and the equipment provided are safe before each practice/competition occurs. Any concerns must be mitigated before activity initiation. In addition, weather can also be a factor for many sporting events and requires written policies for addressing threatening weather situations, including, but not limited to, heat/cold extremes, lightning, standing water on the field, etc. Policies should identify proper responses to weather issues, as well as who is responsible for making

any judgment calls. Whenever activity occurs in high-heat situations, the coaching staff must ensure student-athletes performing without air-conditioning are provided additional breaks and access to liquids throughout practice/competition.

Concerning any required protective equipment, all coaching staff must reinforce the necessity of utilizing protective safety equipment properly, and the warnings must be repeated throughout the season. Equipment should be properly fitted to the athlete's physique to ensure correct functionality. In addition to verbal communication and enforcement of use, warnings regarding improper use should be discussed later in the documentation process (Armstrong & Stevenson, 2023).

Supervision

Supervising student-athletes and all assistant coaching staff is necessary. Regarding student-athletes, general supervision begins before the practice is scheduled to begin and can extend beyond the end of the scheduled practice period. With younger student-athletes, the necessity to supervise after practice can continue until parents or other responsible parties collect their student-athletes. Supervision may also extend beyond the immediate practice area (gym floor, field, pool, etc.) to include locker rooms, bus rides, parking lots, etc.

Supervising the assistant coaching staff is also the responsibility of the head coach. In many situations, the head coach may have full authority to hire their assistants. As a result, athletic directors must ensure that head coaches are doing so while following all school/district HR hiring procedures. Additionally, head coaches may be responsible for much of the assistants' training. Ultimately, the head coach will need to ensure that their coaching staff members are all reinforcing the same skills, behaviors, and expectations.

Every agency must have an established practice for notification of any unusual behavior or suspected injury. This information should be communicated through proper channels to the appropriate individual(s), including the head coach, athletic training staff, AD, and the student-athlete caregiver. All coaches must be aware of the expectation to pass along any incident they witness or hear to the AD (Mitten, 2012).

General Safety

The head coach may be responsible for collecting required physicals or, at a minimum, for ensuring that any without a physical or other required paperwork on file is restricted from activity. The head coach is also responsible for assessing whether student-athletes are in condition for the level of activity they will be exposed to before the first practice. This also applies to student-athletes who are returning post-injury.

When the athletic training staff is absent, it should be clear who can make injury decisions. It is extremely important to recognize the difference between evaluating an injury for first aid purposes and diagnosis. Coaching staff should never overextend themselves beyond their training/certification or overrule any medical professional's decision. When coaching younger players, deferral to caregivers to take the injured child to seek professional care is recommended.

All coaching staff should possess basic first aid and CPR certifications, know the location, and have access to AEDs. Documentation of coaching staff certifications should be maintained on file with the AD and revisited annually. Concussion policies and protocols need to be established and well disseminated. The coach is responsible for ensuring processes are followed when an athlete is assumed to have a concussion.

In the event of an emergency, all coaches should be very familiar with the response plan. This becomes especially important when a team may be distributed throughout a building or other playing area (i.e., players scrimmaging while others are weight training). To best reinforce expectations for emergencies, practice drills should occur. It is vital to document who was there, when it occurred, and what was practiced, and record with the AD (Armstrong & Stevenson, 2023; Sawyer, 2019; Sport Coaching Legal and Compliance, 2024).

Documentation

A coach assuming they can walk into practice and "wing it" is not safe for the student-athletes, the coach, or the agency. Detailed practice plans should be developed and retained in the event a student-athlete is injured and later litigates. These plans must be detailed to include skills addressed, drills run, who was supervising, time, date, and location. Establishing a team handbook can also be essential and

useful when communicating expectations to players and student-athlete families/caregivers. With the easy availability of technology, film recordings of instruction can also serve as documentation in the event of litigation (Armstrong & Stevenson, 2023).

In addition to documentation of what is expected and communication of the expectations, it is also necessary to ensure that student-athletes and caregivers are warned of the potential risks that are inherent to the activity. The handbook plays a major role in this effort, including liability waiver forms to be signed by the player and/or caregiver, as well as warning posters in the locker rooms and practice areas. Furthermore, Sawyer (2019) indicates that conducting beginning-of-the-year meetings, documenting who was there, when and where it was conducted, and reviewing these documents will reinforce expectations as well as answer questions individuals might have.

Conclusion

A new athletic coach must ensure they know many things beyond teaching student-athletes how to play a specific sport to protect their student-athletes, themselves, and the overseeing agency. Four common areas to mitigate safety issues include providing a safe environment, proper supervision, quality general safety, and appropriate documentation. Further, additional risk management considerations consist of coaches participating in regular coaching education opportunities and professional development to maintain knowledge of skills and risk management techniques and learn from their professional organizations' standards and rule changes as they change over time (Sawyer, 2019).

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The Physical Educator

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The first page of the manuscript must include the title of the article only. Do not include your name, affiliation, or other identifying information. An abstract must accompany each manuscript.

Label all charts, graphs, and tables and place them on separate pages. Submit all images 300 dpi with appropriate captions. Number the pages beginning with the title page followed by text, references, figure captions, tables, and figures. Figures must be clean and legible. Freehand art or lettering is not acceptable.

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